

# EMERGENCY MEDICAL SERVICES DIVISION

## 2022 ANNUAL REPORT TO THE KING COUNTY COUNCIL



SEPTEMBER 2022





Medic One/Emergency Medical Services (EMS) serves nearly 2.3 million people in Seattle & King County and provides life-saving services on average **every 2 minutes**.

It is available to everyone, whatever and wherever the emergency. Every year, **the Medic One/EMS System saved thousands of lives:**

In **2021**,

**Emergency Medical Technicians (EMTs)** responded to approximately 225,000 calls regionwide.

**Paramedics** responded to approximately 45,000 calls for advanced life support.

Compared to other communities, cardiac arrest victims are **two to three times more likely to survive** in Seattle & King County from out-of-hospital cardiac arrest.

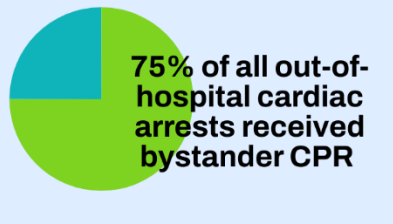
**Strong, effective medicine is the hallmark of the regional Medic One/EMS system.**



# It takes a SYSTEM to save a victim

In order to increase survival from out-of-hospital cardiac arrest (OHCA) and to ensure high quality patient care, King County EMS tracks a number of performance measures designed for continuous quality improvement. Selected 2021 performance measures are highlighted below.

## Community



75%

## Dispatch



Performance measures for dispatch focus on accurate recognition of cardiac arrest

97%

97% of all cardiac arrests were recognized by 9-1-1 operators

96% of these calls were assigned the correct resource level

## Basic Life Support

Median BLS unit response time: 5.4 minutes

Average chest compression fraction: 91%



5.4 min.

## Advanced Life Support



Median ALS unit response time: 8.7 minutes

Rate of successful first attempt intubations: 85%

8.7 min.

Overall, **242** lives were saved from OHCA in 2021!



## System Performance

In 2021, the survival rate for witnessed VF cardiac arrest (widely recognized measure of EMS performance) in Seattle and King County was 46%.



## Directors' Message

We are pleased to present the Emergency Medical Services (EMS) Division 2022 Annual Report to the King County Council, per King County Ordinance #12849.

The 2022 report highlights just some of the activities undertaken by the EMS Division and its partners over the past year to deliver excellent medical services, improve operations, and address regional and community concerns. While it is difficult to choose just a few to mention, the following examples embody our commitment to finding ways to meet emergent needs.

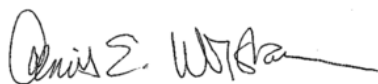
With the wave of retirements, promotions and expansions continuing into 2022, EMT hiring is on the rise - the number of new recruits needing initial EMT training has more than doubled from previous years. This increased demand in training is now exceeding the anticipated level included in the 2020-2025 Strategic Plan. Working with its partners, the EMS Division found a logistical and financial solution for training more than 200 EMTs by the end of the year.

Integral to treating cardiac arrest is early defibrillation. One of the Automated External Defibrillators (AEDs) that is most widely used throughout the region by EMS agencies is coming to the end of its lifecycle, requiring our partners to purchase new devices. However, this device has been discontinued, which will pose substantial problems in ensuring exceptional patient care among out of hospital cardiac arrest victims. The EMS Division was able to track down and purchase a stockpile of AEDs and accessories so that fire departments who are in need have access to the life-saving tool until a new AED can be deployed within King County.

EMS data is often an early indicator of community needs, so we are frequently asked to collaborate on various surveillance opportunities. Information on types of emergency medical incidents occurring helps identify trends and where efforts could be focused. Providing data on such growing conditions as opioids, firearm injuries and extreme weather events allowed us to play a central part in our public health partners' operational and strategic planning efforts.

Of course, we've also had to contend with COVID-19 on top of our other work. Symptom monitoring and test distribution kept our workforce protected and healthy. Ongoing surveillance helped regional leadership provide situational awareness and coordinate response efforts centrally across sectors.

The additional burden that COVID-19 presents has been relentless and demanding of all of us. However, despite constant challenges, our EMS partners and entire EMS system keep at it, and continue to respond, care for and support our communities in King County. We admire and deeply respect the thousands of individuals that comprise our EMS system and appreciate their ongoing commitment to the people of this region.



**Dennis Worsham**  
Interim Department Director,  
Public Health – Seattle & King County



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## **Executive Summary**

The Emergency Medical Services (EMS) system serving Seattle & King County is known worldwide for its service excellence, its innovation, and most importantly, its medical results. The system's success can be traced to its design which is based on partnerships, medicine, science-based strategies, and its commitment to constantly improving.

A theme that has shown itself over the past year is the region's combined ability to press on and support the community despite being faced daily with new challenges. We are fortunate here in King County to have capable, committed, and skilled emergency EMS professionals who dedicate their careers to effectively respond to the spectrum of public safety and medical emergencies. The excellence of the King County EMS system occurs only as a result of cooperation across all participants – individual and organizational - understanding the overarching mission and their essential role as part of this team.

A world-renowned EMS system like ours is known to continually step up to the plate to care for the needs of our community. However, the EMS system has also stretched beyond conventional roles to serve the region. For more than two years, EMS has been integral in addressing the many challenges of COVID-19. Partnering with community health leaders, EMS has consistently served on the front line of COVID-19 testing and vaccination. Fire Departments, in collaboration with the King County EMS Division, have developed innovative programs to address gaps in the healthcare safety net that often can occur at the intersection of medicine and social services. Other programs are addressing community challenges related to the drug epidemic and gun violence through a range of partnerships designed to provide more timely and accurate surveillance as well as develop EMS strategies to build better response to these complex problems.

It is only because of our committed partners that our system can rise to these different challenges. These efforts require a dedication to proven strategies, willingness to collaborate, and the ability to innovate as new risks arise. This report shows the many ways that our region has come together to collectively address the needs of our communities, and strives to do more, regardless of the demands.

## Acknowledgements

We would like to thank those who contributed to the EMS Division 2022 Annual Report, including the staff members of the EMS Division, King County Medic One, the University of Washington, and our regional partners. We recognize below those who contributed in various ways to the content, writing, design, and production of this document.

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# EMS System Overview

Any time residents of Seattle and King County call 9-1-1 for a medical emergency, they are using the Medic One/EMS system. This internationally renowned regional system responds to an area of 2,134 square miles and serves a population of over two million. The system is managed by the Emergency Medical Services (EMS) Division, Public Health – Seattle & King County and relies on complex partnerships with fire departments, paramedic agencies, EMS dispatch centers and hospitals for the program's success.

The Medic One/EMS system in Seattle and King County is distinct from other systems in that it is **medically-based, regional, and uses a tiered system for out-of-hospital response.**

## Medically-Based Model



***The medical model is the core of the EMS program in King County.***

In essence, it asserts that direction and practice must be derived from the highest standards of medical training and medical care. Accordingly, the EMS Division strives for emergency medical care founded on the highest standards of training, best medical practice, scientific evidence, and close supervision by physicians experienced in EMS.

The leadership of the King County and Seattle Medical Program Directors (MPD), Dr. Thomas Rea and Dr. Michael Sayre, ensures the success and the ongoing medical quality improvement of the EMS system. Activities such as the review of every cardiac arrest event for more than 40 years and patient protocol compliance audits, have supported the best possible care. The result of this ongoing quality improvement is enhanced patient outcomes and an excellent cardiac arrest survival rate that has been among the highest reported in the nation.

## Regional Partnerships



***Regional partners sustain uniformity and consistency across the entire EMS system.***

While each provider operates individually, the care provided to the patient operates within a “seamless” system. It is this continuum of consistent, standardized medical care and collaboration between 28 fire agencies, five paramedic agencies, four EMS dispatch centers, over 20 hospitals, the University of Washington, and the residents throughout King County that allows the system to excel in pre-hospital emergency care.

## Tiered Out-of-Hospital Response System



***The use of a tiered response system ensures the most appropriate care provider responds to each 9-1-1 call.***

There are five major components in the tiered regional Medic One/EMS system, as described on the following page.

**EMS System Access:** A patient or bystander accesses the Medic One/EMS system by calling 9-1-1 for medical assistance. Bystanders' reactions and rapid responses to the scene can greatly impact the chances of patient survival.

**Telecommunicator (Dispatcher) Triage:** 9-1-1 calls are received and triaged by telecommunicators at one of four dispatch centers. Following medically-approved guidelines, telecommunicators determine the most appropriate level of care needed and resource(s) (e.g., BLS, ALS, MIH, or Nurseline) Providing pre-arrival instructions for most medical emergencies, dispatcher guide the caller through life-saving steps, including CPR and AED instructions until the Medic One/EMS provider arrives.

**Tier One Response – Basic Life Support (BLS) Services:** EMTs respond to 100% of emergency medical calls and usually arrive first on scene. Approximately 4,400 EMTs are employed by 28 fire-based agencies. Arriving at the scene in 5.4 minutes on average, BLS provides advanced first aid, CPR and AED usage to stabilize the patient. EMTs are certified by the State of Washington and are required to complete initial and ongoing continuing education and training to maintain certification. In response to low acuity calls, MIH units may be dispatched to respond.

**Tier Two Response – Advanced Life Support (ALS) Services:** Paramedics usually arrive second on scene to provide emergency care for critical or life-threatening injuries and illness. Regional paramedic services are provided by five agencies operating 27 ALS units throughout King County, including fire departments in Bellevue (4), Redmond (3), Shoreline (3), Seattle (8), and King County Medic One (9). A contract with Snohomish County Fire District 26 provides ALS services to the Skykomish and King County Fire District 50 area, from Baring to Stevens Pass. Paramedics are certified by the State of Washington and are required to complete intensive education and ongoing training to maintain certification.

**Additional Medical Care - Transport to Hospitals or Clinics:** Once a patient is stabilized, EMS personnel determine whether transport to a hospital or clinic for further medical attention is needed. Transport is provided by an ALS or BLS agency, private ambulance, or taxi for lower-acuity situations.

## EMS Tiered Response System



**Access to EMS System**  
Bystander calls 9-1-1



**Triage by Dispatcher**  
Use of Emergency Medical Response Assessment Criteria



**First Tier of Response**  
All EMS service requests receive a first tier response from Basic Life Support (BLS) by firefighter/EMTs, MIH, or Nurseline



**Second Tier of Response**  
Advanced Life Support (ALS) by paramedics



**Additional Medical Care**  
Transport to hospital

## 2022 EMS Division Highlight

### The EMS System: COVID-19 Response Update

As we consider the year past, the year current, and the year ahead, we understand the enormous challenge caused by the COVID-19 pandemic. The pandemic has disrupted almost every aspect of life, and certainly EMS has experienced impacts from the very beginning. The effort has required remarkable dedication to excellence, teamwork across a range of partners, and most of all a determined resilience to respond and adapt to the needs of our King County communities large and small.

We continue to rely greatly on our Medical Program Directors, in coordination with Public Health – Seattle & King County, to guide the region safely through the pandemic. Recognizing that transmission occurs unknowingly despite everyone’s best intentions to mask, socially distance, get tested, and use common sense, it was recommended that the EMS workforce achieve comprehensive vaccination. This directly aligns with the Governor’s mandate, and underscores the region’s commitment to protecting our colleagues, family and friends.

With the community prevalence of COVID-19 infection and the numbers of infection in the workforce declining this year, several COVID-19 strategies were modified. The routine point of care COVID-19 testing for all EMS providers without symptoms or an exposure or who are otherwise at risk was no longer recommended. Evidence supporting best practices for personal protective equipment indicated that there was no compelling evidence that gowns provide any protection to prevent COVID-19 transmission - in fact, donning gowns can impede timely and effective care for critical conditions such as cardiac arrest. Given this information, policies were changed so that the donning of gowns is now recommended only for situations where there is risk of bodily fluids contact and contamination.

As our pandemic response changed, we sunsetted several tools used to monitor the impacts of COVID-19. This included daily surveillance to identify EMS encounters with positive and probable COVID-19 patients and symptom monitoring to inform quarantine and isolation decisions. EMS recently ceased distributing point of care COVID-19 tests, after handing out its last kit in March of this year.

However, we still continue to convene as a region and provide situational awareness through dashboards that track and monitor the virus’ activity and responses to our community. These critical data and information help inform Public Health’s COVID-19 response efforts to direct critical resources to areas of need. EMS data also inform ongoing CDC-funded evaluation of the Economic, Social, and Overall Health Impacts of COVID-19 in our region. This ongoing surveillance allows EMS to respond to the challenges posed by the pandemic and ensure our EMS system is effective, and our communities are safe. EMS will also be available to support Public Health’s COVID-19 testing and vaccination sites.

*Relying on trusted health leaders to chart the course forward and keep the community safe, King County has gone from the epicenter of the outbreak, to now one of the nation’s highest vaccinated communities with the some of the lowest cases and death rates two years later.*



# EMS Division Programs Overview

## Background

The Medic One/EMS 2020-2025 Strategic Plan is the primary policy and financial document directing the Medic One/EMS system in its work. Defining the responsibilities, functions, and programs of the EMS system, the Plan presents a comprehensive strategy to ensure the system can continue to meet its commitments. It documents the system’s current structure and priorities and outlines the services, programs and initiatives supported by the countywide, voter-approved EMS levy.

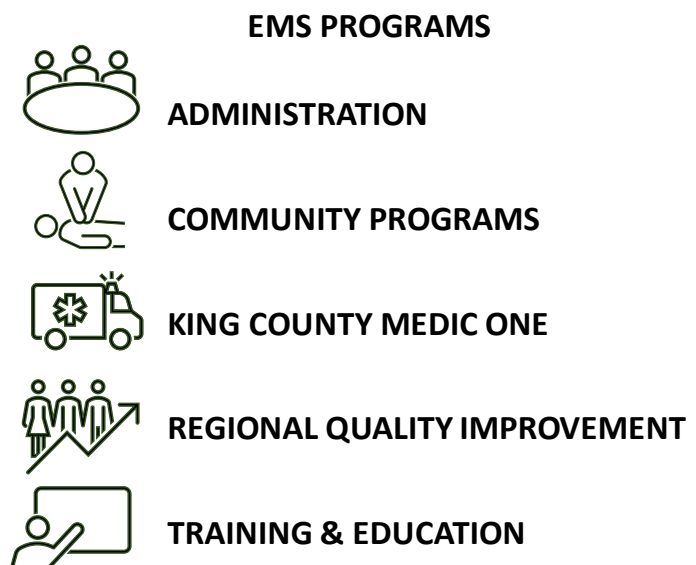
## Overview

The EMS Division of Public Health - Seattle & King County works with its regional partners to implement the Strategic Plan. The Division manages the core Regional Services and Strategic Initiatives that support the key elements of the system. These programs help tie together the regional medical model by providing consistent regional medical direction, standardized EMT training and continuing medical education, uniform EMS training for emergency dispatchers, centralized data collection and expert analysis, paramedic service planning and evaluation, and financial management of the regional EMS levy fund. Coordinating these on the regional level ensures pre-hospital patient care is delivered at the same standards across the system; policies and practices reflecting the diversity of needs are maintained; and local area service delivery is balanced with centralized interests. All EMS Division programs are designed to enhance the integrated Medic One/EMS services and regional approach, and are developed through strong partnerships with other regional EMS agencies and innovative leadership in the emergency medical field.

The arrival of COVID-19 interrupted the EMS Division's normal activities, requiring that we modify our programs and how we approach them. While the pandemic certainly posed a number of challenges, it also brought opportunities to respond creatively while focusing on the safety and welfare of the community.

In our 2021 report, we highlighted the continued adaptability of many of the Division’s programs – the modified approaches to delivering services to the community, the alternatives provided to train and educate our workforce, and the elevated efforts of quality improvement in providing more comprehensive situational awareness for our ongoing COVID-19 response. This section of this report highlights how our Division’s programs alongside our regional partners continued to rise to the challenge in 2022. For more information about other EMS regional programs, please refer to the EMS webpage:

[www.kingcounty.gov/health/ems.aspx](http://www.kingcounty.gov/health/ems.aspx)



## Administration

*The Administration Section provides regional leadership and financial oversight to internal and external customers to ensure the integrity and transparency of the entire EMS system. It actively engages with regional partners to implement the Medic One/EMS Strategic Plan, undertakes long-term programmatic and financial planning, manages contracts and operational activities, and is responsible for the continuity of business in collaboration with EMS partners.*

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### Regional Groups and Meetings

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The Medic One/Emergency Medical Services (EMS) system in King County is built on regional, collaborative and cross-jurisdictional partnerships to provide among the best pre-hospital emergency care in the nation. While EMS agencies operate individually and retain much autonomy, they all work within a seamless system to provide a continuum of standardized medical care across jurisdictions. It is our partners' commitment to working collectively that has allowed us to build and sustain a truly amazing system.

Central to the system's success is the allegiance to cooperative decision-making. The EMS Division actively engages with its many Medic One/EMS partners to discuss policies and procedures, review economic forecasts and financial plans, oversee major governance issues, and implement the regional Strategic Plan. In-depth discussions occur in the Working and Oversight groups; important decisions made there then proceed to the overarching EMS Advisory Committee for final vetting and endorsement. The EMS Division plays a key role as conveners, supporters, and analysts for driving system-wide decisions.

The EMS Division convenes the following groups:

<b>Group</b>	<b>Description</b>
<b>EMS Advisory Committee (EMSAC)</b>	Formed in 1997, the EMS Advisory Committee (EMSAC) monitors the uniformity and consistency of the Medic One/EMS system. It consists of approximately 20 members representing all aspects of the EMS system and provides key counsel to the EMS Division regarding regional Medic One/EMS policies and practices in King County. Members convene on a quarterly basis to review implementation of the Strategic Plan as well as other proposals put forth, including Strategic Initiatives, consolidations and medic unit recommendations.
<b>EMSAC Financial Subcommittee</b>	Budget and finance directors make up the EMSAC Financial Subcommittee, which advises EMSAC on fiscal and budget issues. Among other issues, the subcommittee reviews economic forecasts, proposed financial plans, requests for reserves, and policies/procedures.

Group	Description
<b>ALS Working Group</b>	The ALS Working Group is a forum for the region's five paramedic programs to share best practices and advice. While it initially began as a financial group, its scope has expanded to include discussion on operational needs, medic unit analyses, and clinical updates by the Medical Program Director, along with ongoing review of ALS costs.
<b>BLS Working Group</b>	The BLS Working Group meets regularly to examine and develop policies related to providing BLS services and its seamless integration with ALS. Representing a broad range of regional providers of varying size, constituencies and needs, these partners identify opportunities to enhance the BLS system as a whole, while recognizing its members' separate funding sources and local decision making. Since its inception in 2015, the group has collaboratively developed programs that support and engage BLS agencies while improving overall system effectiveness.
<b>Dispatch Working Group (DWG)</b>	The Dispatch Working Group (DWG) meets every other month with its partners to collaborate on ways to improve the crucial first component of the EMS system – the 9-1-1 call centers. Members of the DWG include representatives from each of the call centers supporting EMS in King County, EMS providers (fire departments), paramedic providers, and the EMS Division. In addition to improving the system, the DWG looks at current topics, future planning, revising the King County Criteria Based Dispatch (CBD) Guidelines, and reviews calls and incidents that showcase the exceptional job our regional telecommunicators do on a daily basis.
<b>Mobile Integrated Healthcare (MIH) Network</b>	The Mobile Integrated Healthcare (MIH) Network is a learning community for EMS agencies involved and interested in MIH. Convened by the King County EMS Division, MIH Network meetings bring together partners to ask questions, share lessons learned and best practices, and collaborate on all things MIH.
<b>ESO Oversight Committee</b>	The ESO Oversight Committee meets quarterly to discuss topics and issues related to the use of the regionally used electronic health record system (ESO EHR) and health data exchange (ESO HDE). Representatives from BLS agencies, ALS programs, dispatch, hospital partners, and King County EMS Division meet to develop regional standards to inform best practices in the use of these systems to support quality improvement efforts to improve pre-hospital patient care.



Whether through informal workgroups or established oversight committees, the EMS Division is committed to creating ample opportunities for our partners to help shape and direct the future of the EMS system.

2022 was a year of virtual collaboration and meetings with our regional partners, with efficiencies as the theme - increasing standardization, coordination, interconnectedness and support to all agencies through regional approaches were prioritized. Groups formed to vet a language access plan for Limited English Proficient (LEP) individuals as well as meet with AED manufacturers to learn about advancements in technology and future devices. Partners shared ideas about improving the BLS Quality Improvement program, supplemental training needs, and workforce planning region-wide. After identifying the different roles that paramedics play outside of first response, a comprehensive programmatic and financial package outlining such responsibilities, funding alternatives, and simplified reimbursement policies was created and endorsed. Dispatch revisions were considered, MIH programs met to discuss best practices, data, benchmarks and reports were shared across the region.

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***As COVID-19 response and mitigation stretched personnel and resources thin, there were still finances to be managed, invoices to be processed and the many lines of business to be continued. The Administration Section stepped up its coordination and collaboration to keep the increased amount of work coming in moving forward smoothly.***

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## Regional Quality Improvement

The Regional Quality Improvement (QI) Section conducts programmatic, scientific, and case-based evaluation of the EMS system to improve the quality of EMS patient care in King County. To advance the science of resuscitation and EMS care, it partners with investigators in the EMS Division and at the University of Washington on research projects. This allows for productive and unique collaboration across the academic and operational EMS community. The results of these medical quality improvement efforts improve care, patient outcomes, and subsequently, the health of King County residents.

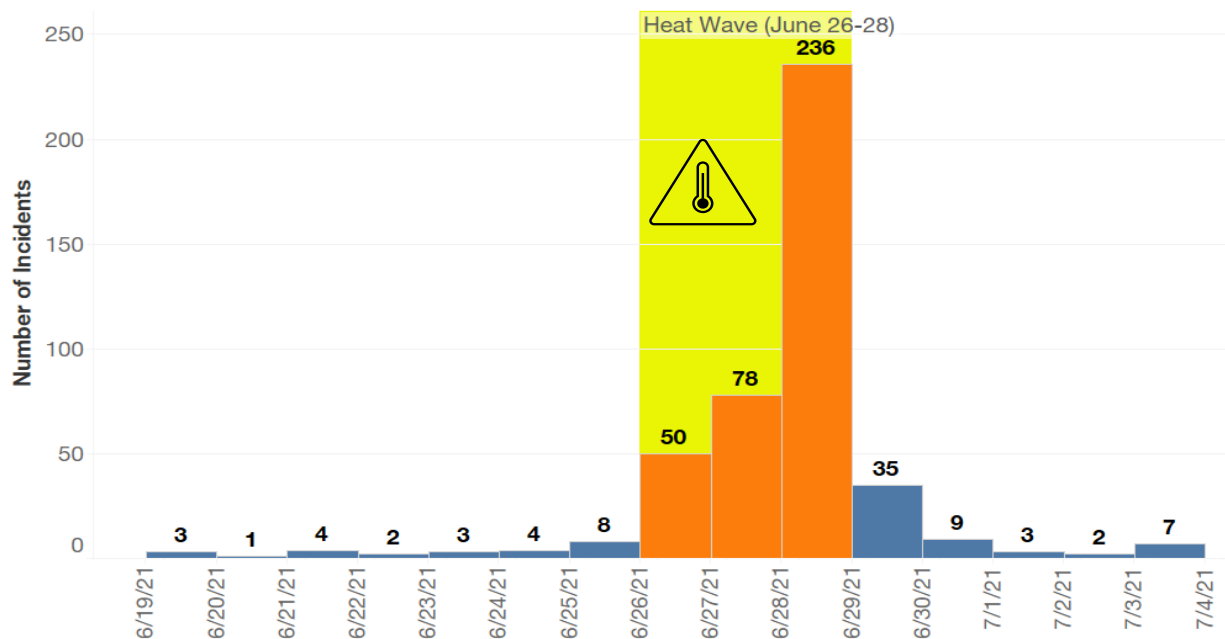
The Regional QI Section’s ongoing surveillance helps identify impacts on specific county populations that can then drive future strategies. These activities allow the EMS Division to be an active partner in King County’s community-based policies and response efforts.

## Climate Change Surveillance

The Pacific Northwest is generally known for its temperate climate, clean air, and vast greenery. However, over the past few years, our region has felt the impacts of climate change, through wildfire smoke, heavy rain events, and extreme temperatures. Between June 26-28, 2021, King County, along with the rest of the Pacific Northwest, experienced an unprecedented heat wave with record-shattering temperatures<sup>1</sup>. Hotter temperatures are known to increase the risk of illness and death from heat stroke and various respiratory, cerebral, and cardiovascular disease. This extreme heat event prompted Public Health – Seattle & King County to activate its Health and Medical Area Command (HMACH). The EMS Division helped support the response efforts by developing surveillance systems to track EMS incidents for heat-related conditions.

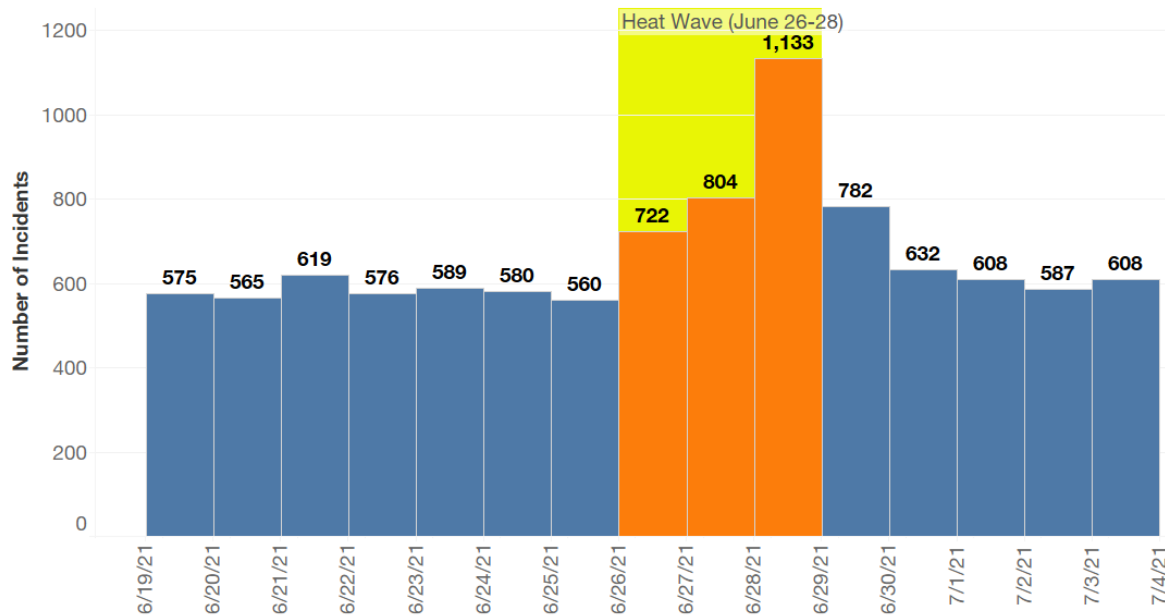
Heat-related EMS incidents (i.e., heatstroke, heat exhaustion, heat syncope) increased considerably during the extreme heat event, from 25 incidents in the week prior to the heat wave (June 19-25, 2021) to 364 incidents in the three days of extreme heat (June 26-28, 2021). Over 80% of heat-related incidents (299/364) were among patients 45 years and older.

**Heat-Related EMS Incidents (6/19–7/3/2021)**



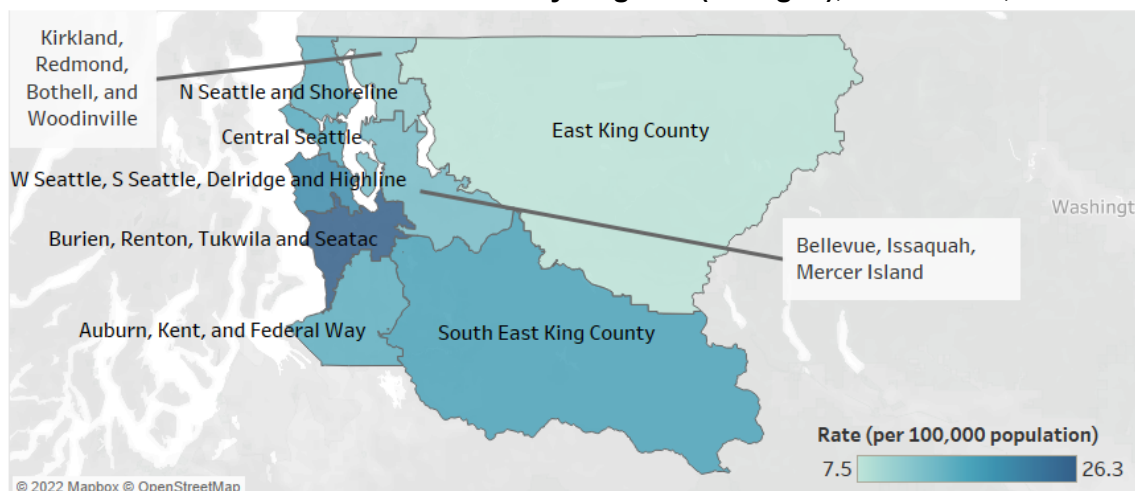
There was also sharp increase in total EMS incidents, with the peak occurring on June 28, corresponding to the highest recorded temperature seen in the region. Increases in specific types of calls, particularly generalized weakness, dehydration, cardiac arrest, and obvious death, were observed during this time. The Washington State Department of Health reported over 30 heat-related deaths in King County for June 26 – August 30, 2021.<sup>1</sup>

### Overall EMS Incidents (6/19-7/3/2021)



Rates of heat-related incidents were higher in areas of South and Southeast King County. The highest heat-related EMS incident rates were in the Burien, Renton, Tukwila, and SeaTac region (26.3 incidents per 100,000 population), followed by West and South Seattle region (20.2 incidents per 100,000 population) and Southeast King County region (17.3 incidents per 100,000 population). Similar patterns were observed for age-specific rates, especially among those 45 years and older.

### Heat-Related EMS Incident Rates by Regions (All Ages), June 26-28, 2021



Vashon Island is not shown because there were no heat-related EMS incidents in that location during the specific time period. Map boundaries are regions based on Health Reporting Areas (HRAs). HRAs coincide more closely with city boundaries, and within larger cities (e.g., Seattle), neighborhoods are defined (e.g. Ballard, Downtown). For more information regarding HRAs, please visit: <https://kingcounty.gov/depts/health/data/community-health-indicators/definitions.aspx>.

In summary, the regional EMS system was significantly impacted by the heat event, with a marked increase in EMS incidents directly and indirectly related to temperature. Although heat-related incidents occurred in every part of the county, the highest rates of heat-related incidents were concentrated in South and Southeast King County, areas that have also been disproportionately affected by COVID-19 and experiencing other health inequities.<sup>2-4</sup> In a heat mapping project conducted by King County and the City of Seattle, many of these same areas were shown to be hotter and hold onto heat longer due to lower percentages of tree canopies and higher industrial footprints and activities.<sup>1</sup>

Looking to the future, climate extremes, such as the heat wave of June 2021, are likely to occur more frequently and with greater intensity. In a PHSKC Health Officer statement about extreme heat, Dr. Jeff Duchin said, “climate change is a health emergency.”<sup>5</sup> Public Health – Seattle & King County’s (PHSKC) *Blueprint for Climate Change and Health* outlined how climate change-related environmental conditions and exposures may impact human health.<sup>6</sup> High-fidelity EMS data helps monitor, evaluate, and plan for the health consequences of climate extremes. This information can identify local and regional adverse health impacts and help target strategies to specific geographies or persons to mitigate climate-related health risks. On the one-year anniversary of the 2021 heat dome event, King County released its first-ever Extreme Heat Mitigation Strategy.<sup>7</sup> To help achieve those strategic goals, the EMS Division will continue to partner with other public health colleagues, climate change leaders, and community organizations while managing the demands on the emergency care system which provides critical services to our community.

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## Opioid Overdose Surveillance

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Nationally, drug overdose deaths have reached a historic high, devastating families and harming our communities<sup>1</sup>. In King County, deaths due to drug overdose have increased year-over-year for the past decade. The number of deaths increased by over 40% from 510 in 2020 to 714 in 2021. Most of these deaths involve opioids, either used alone or in combination with methamphetamines and/or cocaine. Opioids depress breathing and may cause respiratory arrest. The rapid rise in overdose deaths is driven in large part by illicitly manufactured fentanyl, an extremely potent synthetic opioid. Fentanyl-involved deaths increased 133% from 170 in 2020 to 396 in 2021.

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*Preliminary data suggests that King County experienced a 40% increase in opioid overdose deaths between 2020 and 2021, with this same trend continuing into 2022.*

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EMS frequently responds to overdose patients. Like the trend in drug overdose deaths, EMS response to suspected opioid overdose in King County increased by 23% from 3,046 in 2020 to 3,740 in 2021. In these cases, EMS provides essential lifesaving treatment by performing rescue breathing using a special bag and mask to deliver oxygen-enriched breaths. Once this treatment is underway, EMS may also deliver the medication antidote to opioids – naloxone – commonly known by its brand name Narcan®, to also help reverse the adverse effects of the overdose.

### Improvements to the Public-Facing Non-Fatal Opioid Overdose Dashboard

The EMS system is an important source of information about opioid overdoses. Therefore, beginning in 2018, the EMS Division actively collaborated with other divisions in Public Health - Seattle & King County to develop a public-facing dashboard to display non-fatal opioid overdose incidents. This dashboard enables accurate and timely tracking of overdose emergencies and helps target community efforts involving prevention. Updated weekly from near real time EMS data, the dashboard identifies overdose clusters by geography, thereby enabling targeted outreach to people with substance use disorder. The dashboard is available publicly and is used by Public Health and other supporting health organizations to develop and refine strategies to engage those at risk for drug overdose.

In 2021, after recognizing the challenges to identifying overdoses from EMS data, the EMS and Prevention Divisions set out to improve the dashboard. This was done in three ways:

- 1) By improving the methodology to create one record for all the EMT and paramedic units that responded to a single person overdosing;
- 2) By adding updated language to the way EMS data is searched to reflect new terms for opioids and their use (e.g., “goofballing,” “blues”); and
- 3) By expanding the definition of an opioid overdose from a “very high likelihood” to a “high likelihood.”

These changes provide a more accurate count of opioid overdose incidents and improve the ability to detect overdose upticks and clusters. For more information, please visit this link:

<https://kingcounty.gov/depts/health/overdose-prevention/non-fatal.aspx>.

Reference: <sup>1</sup><https://www.whitehouse.gov/briefing-room/statements-releases/2022/03/01/fact-sheet-addressing-addiction-and-the-overdose-epidemic/#:~:text=Drug%20overdose%20deaths%20have%20reached,our%20work%20to%20save%20lives>

## Expansion of the Pilot Program to Engage Overdose Survivors

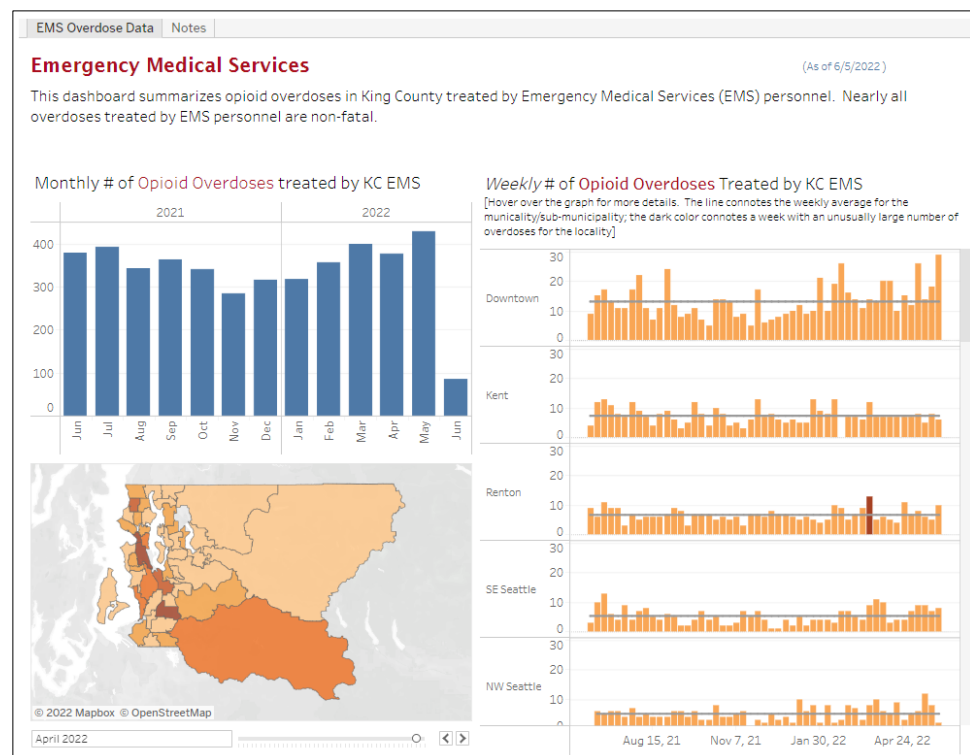
Survivors of overdose are at greater risk for future overdoses. Recent survivors can be more amenable to treatment, so it is important to increase outreach efforts to connect recent overdose survivors to addiction treatment, harm reduction, and social services. One way to identify people who have recently survived an overdose is by using EMS data.

As highlighted in the 2021 Annual Report, the EMS and Prevention Divisions of Public Health collaborated to pilot a program designed to engage people following their emergency care for overdose. The initial phase, completed in February 2020, identified people who recently overdosed in Seattle. A social worker trained in substance use subsequently attempted to contact these individuals by phone to offer treatment and other support services. The second phase, started in April 2021, expanded to involve all of King County and uses EMS data to identify people who overdose on fentanyl, opioids, or other pills (e.g., benzodiazepines). Leveraging a precedent for text-based communications adopted by Public Health in response to COVID-19, Phase 2 uses an online platform to contact patients with a text message. Patients who request information receive a phone call from a social worker or referral information via text based on their contact preference.

A preliminary evaluation of Phase 2 demonstrated the “text-based/call-based” method reached a greater proportion of people than call-based alone method. A similar number of participants requested referrals to services. While a greater number of people were contacted in the second phase, the approach required two-thirds less social worker staff time. The EMS Division will continue to help assess the program to refine and improve how to engage and benefit this high-risk group.

Our Probable Opioid Overdose Dashboard can be accessed here: <https://kingcounty.gov/depts/health/overdose-prevention/non-fatal.aspx>.

This dashboard provides timely data on EMS treated overdoses by month, location, and week with visual representation of week(s) with large number of overdoses. We continue to refine the data for this dashboard to improve data quality and completeness.



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## Public Health Firearm Injuries Surveillance

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In the United States, gun violence is a major public health problem and a leading cause of premature death.<sup>1</sup> According to the King County Prosecuting Attorney's 2021 Year End King County Firearm Violence Report, the number of incidents of shots fired (n=1405) increased by 54% and the overall number of shooting victims (n=460) increased by 70% in year 2021 as compared to the four-year average for 2017-2020.<sup>2</sup> While the number of shootings countywide remain relatively low compared with other large American cities, the region has experienced a rise in violence that mirrors other metropolitan areas.

Preventing death, disability, and injury from gun violence requires a public health strategy that involves timely surveillance, research to identify effective prevention policies, and community initiatives to implement and improve approaches demonstrated to work.<sup>1</sup>

In King County's public health approach to firearm injury prevention, agencies seek to understand **which** individuals or populations experience gun violence, **why** they experience such violence (what factors produce risk or are protective), and **what** evidence-based, community interventions can be implemented to prevent future incidents.<sup>2</sup> The Assessment, Policy, Development and Evaluation (APDE) Division of Public Health – Seattle & King County (PHSKC) monitors hospitalization and death data to describe trends of firearm injuries in the King County population.<sup>3</sup> The Division works closely with the PHSKC Violence and Injury Prevention team to develop and evaluate upstream evidence-based prevention programs.

APDE has engaged the EMS Division to explore the potential use of EMS data to address gaps in its surveillance system. Advantages of using EMS data for firearm injury surveillance may include:

*Characterization of geographical distribution within the County* - Since hospitalization and death data do not specifically describe *where* a firearm injury event occurred, EMS information provides insight into the geographical distribution of firearm injury incidents within the County. Mapping firearm injury incidents enables the Violence and Injury Prevention team and other community partners to implement geographically targeted interventions within affected communities.

*Timeliness of data* - Because of the EMS investment in a regional, standardized data collection system and information technology infrastructure, EMS information can be reported more quickly and frequently than other data sources. The timeliness of EMS data enables Public Health and community partners to act more quickly to disrupt the cycle of violence.

*Identification of less severe injuries* - Not all firearm injury incidents result in hospitalization or death. EMS data can identify incidents of firearm injury of less severity that do not result in hospitalization. Most often these patients are treated at the Emergency Department.



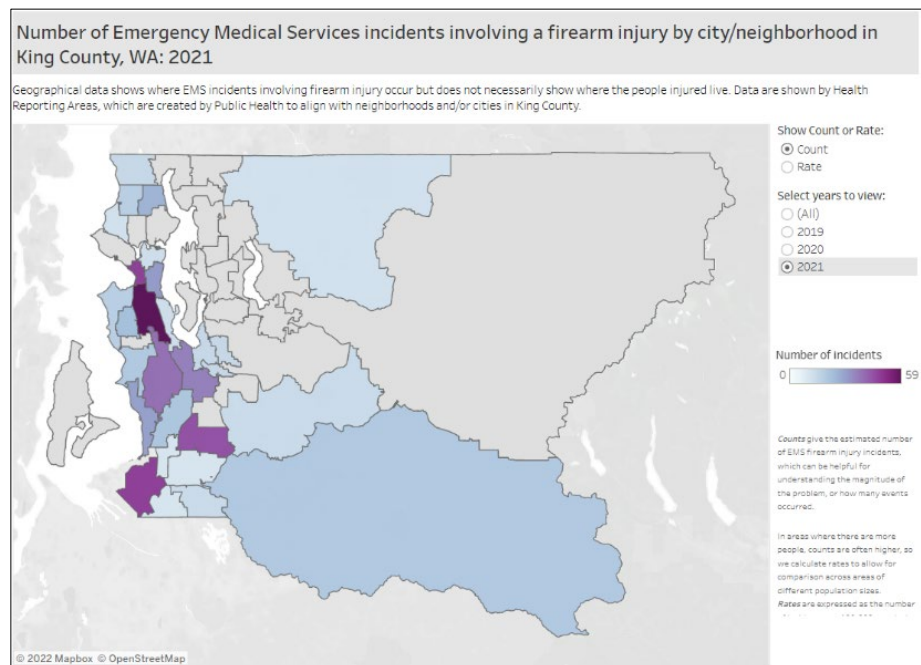
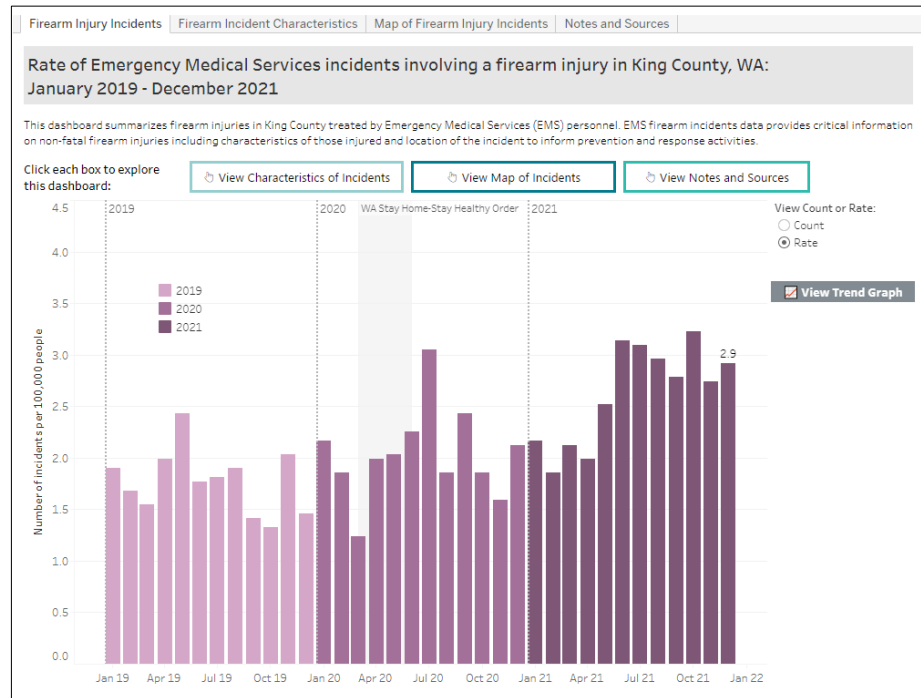
## Development of New Public-Facing EMS Firearm Injuries Dashboards

Epidemiologists from the EMS Division’s Regional Quality Improvement section developed methodologies to characterize injury severity, intent, transport types, demographics, and geographical categories using information captured from the EMS reports. The EMS Division works with APDE to use the resulting aggregated data to create data dashboards. These dashboards have been available to the public starting in May 2022.

Trends in monthly counts of EMS incidents of firearm injuries correspond to the increases reported by other King County agencies shown in the image to the right. In 2021, upwards of half of all firearm injury incidents involving EMS response present with indicators of serious and potentially life-threatening injury. In terms of demographics, approximately 85% were male with a majority from the 25-44 age group.

### Rising to the Challenge

As highlighted by the King County Executive Dow Constantine, increasing incidence of firearm injuries necessitate dedicated investment in public health approach to disrupting cycles of violence and prevention of future tragedies.<sup>4</sup> The EMS Division’s expanded partnership with APDE to describe populations, event characteristics, and geographical distribution of firearm injury incidents in King County can improve existing surveillance methods. In turn, the information enables violence prevention organizations to direct and refine programs aimed at improving the safety and health of our shared community.





Routine updates to the dashboards may be viewed here:  
<https://kingcounty.gov/depts/health/data/firearms/EMS.aspx>.

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3. King County Public Health – Seattle & King County. The Public Health Approach to Gun Violence. <https://kingcounty.gov/depts/health/violence-injury-prevention/violence-prevention/gun-violence.aspx>. Accessed June 2022.
4. King County Executive Dow Constantine. Executive News: Urgent gun violence prevention investments in Executive Constantine budget proposal. June 5, 2021. <https://kingcounty.gov/elected/executive/constantine/news/release/2021/June/15-gun-violence-budget.aspx>. Accessed June 2022.

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## Research Studies and Publications

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The EMS Division collaborates with the University of Washington faculty and other guest researchers to conduct research and analyses. From 2021 to 2022, King County EMS disseminated a range of research findings to wider national and international audiences through publications in peer-reviewed scientific and trade journals. For a full list of publications, refer to page 61, Appendix C: EMS Division Publications.

### Cardiac Arrest in Air Travelers

King County, Washington is home to one of the 10 busiest U.S. airports. The Seattle-Tacoma International Airport operated by the Port of Seattle served more than 36 million passengers in 2021. The high volume of persons makes the airport a “hotspot” for cardiac arrest. Each year about 14 persons suffer cardiac arrest and are treated at the airport. The Port of Seattle has organized an effective response that involves coordination among the Port of Seattle Communication Center, Port of Seattle Police, Port of Seattle Fire, and King County Medic One. One question, however, is whether federal policy has impacted cardiac arrest resuscitation. Specifically, federal legislative action enacted in 2004 requires U.S. commercial air carriers to have automated external defibrillators (AEDs) onboard airplanes and train airline crews to do CPR and use the AED. These requirements mean that an AED is available on the aircraft as well as in the airport and provides at least the chance for earlier treatment of cardiac arrest that occurs on the plane. The earlier CPR an AED defibrillation can be achieved, the greater the likelihood of survival. However, little is known about airport experiences with cardiac arrest and whether on-plane AEDs have potentially impacted survival.



We evaluated cardiac arrest resuscitation that occurred at SeaTac Airport from January 1, 2004 through December 31, 2019 to determine how often arrests occurred in the airport versus on the plane and the clinical consequences of on-plane AEDs. During the 16-year study period, there were total of 143 cardiac arrests, 34 occurring on the plane and 109 occurring in the airport. The majority of on-plane and off-plane cardiac arrest patients received early bystander CPR (88% and 78%, respectively) and early AED application (71% and 55%, respectively) before EMS arrival. Overall, survival to hospital discharge among all patients was 37%, 4-fold higher than the national average. Survival was greater when the arrest occurred off-plane (44%), though 15% of on-plane patients were resuscitated and survived to ultimately be discharged from the hospital. Importantly, all on-plane survivors received bystander CPR and were defibrillated with the on-plane AED prior to EMS arrival. The findings suggest on-plane arrests are survivable events when bystander CPR and AED are initiated early. The on-plane AED helps support the goal of early defibrillation and was integral for successful resuscitation.

For more information, refer to the following web link to access the full article featured in the American Heart Association journal:

<https://www.ahajournals.org/doi/full/10.1161/JAHA.120.021360>.

### **Ventilation Study: A Better Understanding of Breathing Dynamics**

Acute respiratory distress is a common problem prompting a 9-1-1 and EMS activation. In the most critical patients, the EMS providers must breathe for the patient so provide breaths – also termed “ventilations” – to the patient by squeezing a bag reservoir enriched in oxygen to deliver the breath. Although this technique is a common practice worldwide, little is actually known about how much air is delivered with a squeeze of the bag.



Studies from the hospital have helped inform guidelines for optimal ventilation parameters including the volume of air that is delivered. Bellevue Medic One paramedics used a special measuring technology to assess the ventilation that occurs with the squeeze of the bag reservoir to compare with hospital guidelines.

The results of the evaluation indicated that 90% of breaths achieved the guideline range for both the volume of air and the rate of breaths per minute, an impressive metric given the emergency circumstances and transport for these patients. Ongoing evaluation may seek to better understand ventilation dynamics during different respiratory disorders such as asthma or pneumonia.

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***Regional QI's ongoing observation and analysis helps our regional partners rise to the challenge and respond to what is occurring near real-time out in their communities.***

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## Center for the Evaluation of EMS - Grant-Funded Programs

*The Center for the Evaluation of Emergency Medical Services (CEEMS) undertakes rigorous evaluations to advance the science of pre-hospital emergency care. It provides a forum for leaders from the EMS Division and the Seattle Fire Department to review new developments in clinical care, understand regional implications, and consider gaps in our understanding. CEEMS projects span a spectrum of investigations including cardiac arrest resuscitation, trauma care, pediatric care, and drug overdose.*

*In some instances, projects are supported by external grant funding, providing resources to accelerate specific areas of focus. Its impressive portfolio attracts wide-ranging leadership from across the field of emergency care. Collectively, CEEMS connects innovative ideas to a world-class EMS system to investigate promising approaches, translate scientific understanding into hands-on treatment and improve the delivery of pre-hospital care for King County citizens.*

For the past year, CEEMS has partnered with academic organizations, EMS agencies and industry leaders to focus on a range of projects:

Over the past year, CEEMS has partnered with academic organizations, EMS agencies and industry leaders to focus on a range of projects:

- The HeartRescue Project
- Pediatric Emergency Care Applied Research Network (PECARN)
- Precision Resuscitation to Improve Cardiac Arrest Care
- SCRIPT
- Brain Oximetry during Cardiac Arrest
- New Strategies to Deliver Lifesaving CPR and Defibrillation: The AED Lifesaver Early Responder Trial (ALERT) Study

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### The HeartRescue Project

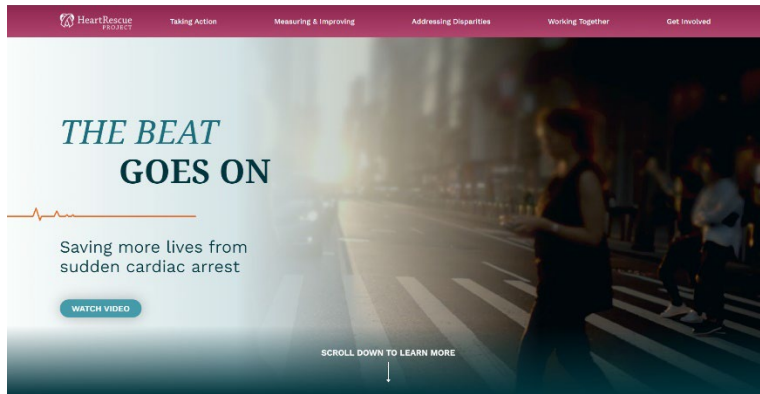
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King County has been involved with the HeartRescue Project, a collaborative effort to increase cardiac arrest survival across the United States, for over 10 years. Supported by the Medtronic Foundation, this initiative created partnerships to systematically expand successful resuscitation strategies to regional and statewide levels through quality improvement activities, monthly forums, publications, and collaborations with partners.

The original partners shared best practices, challenges, and lessons learned working across the chain of survival. Over the past decade, the network continued to grow. What started as a pilot with seven partners and states turned into a national engagement. Collaboration was the formula for such success.

Great focus is placed on measuring care and outcomes to identify opportunities for improvement. With the utilization of the Cardiac Arrest Registry to Enhance Survival (CARES), communities have access to data to systematically monitor their performance and benchmark progress through all the links in the chain of survival. Both King County and greater Washington State have been recognized as consistent national leaders in resuscitation. Regional and Statewide programs involving bystander CPR training, telephone directed CPR instruction by emergency dispatch, and high-performance CPR techniques featured by our EMS agencies have been highlighted as best practices.

This year, the HeartRescue Project is sunsetting in its official capacity, but the initiative will keep going. It's mission, vision, and values live on in other projects carried forth by the Resuscitation Academy Network and the Citizen CPR Foundation.



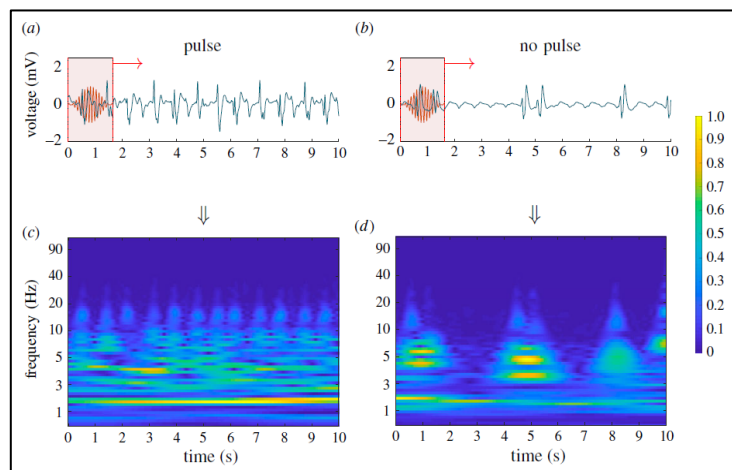
In celebration and honor of the past decade, the HeartRescue Project created a compendium website to highlight the partners, projects, efforts, and collaboration. To learn more about HeartRescue and all the work over the past decade, please go to: <https://heartsbeaton.org/>

Lessons learned from the HeartRescue Project:

- 1) One must engage resuscitation leadership from across the spectrum to build a sustainable system
- 2) One must use a multi-faceted approach that includes a menu of strategies that can be adapted to different settings
- 3) Excellence can be achieved across a range of systems and communities- though disparity in outcomes is still a hallmark
- 4) HeartRescue efforts built the framework on understanding differences, barriers, and accelerating improvement.
- 5) HeartRescue created infrastructure and expertise for outreach to help others.

## Precision Resuscitation to Improve Cardiac Arrest Care

Through a collaborative initiative with the University of Washington supported by the American Heart Association and Philips Healthcare, CEEMS investigators are using advanced statistical and machine learning techniques to improve resuscitative efforts in the field. This includes the evaluation of the ECG during cardiac arrest to find clues about a patient's underlying physiological state and determining the optimal use of defibrillator technology during out-of-hospital cardiac arrest. The overarching goal is to use these "ECG clues" to measure a patient's clinical status and help guide care specific to the individual patient's needs. This project connects the EMS Division with University of Washington emergency medicine, cardiology, bioengineering, and mathematics experts to achieve a "precision medicine" approach that can match the best treatment options to the individual patient. Recent peer reviewed publications include a method to predict viable pulses with ongoing CPR, the mechanism by which bystander CPR improves a patient's physiological status, and a novel method to predict defibrillatory shock success in resuscitation. Ongoing project evaluations include investigating ECG and survival differences between men and women following cardiac arrest and innovative machine learning techniques aimed at reducing the need to pause chest compressions.



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## Study of the Compensatory Reserve Index in Prehospital Trauma (SCRIPT)

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In collaboration with the Seattle Fire Department and the University of Washington, Seattle and King County paramedics are evaluating an early warning system for blood loss. The Compensatory Reserve Index (CRI) algorithm is theoretically used to detect intravascular volume loss using a high-fidelity pulse oximetry probe in trauma patients treated by King County EMS providers. One of the challenges in the care of injured patients is the early identification of intravascular volume loss before progression to hemorrhagic shock. Current identification strategies use vital signs including blood pressure, heart rate and respiratory rate. These conventional markers do not comprehensively achieve early identification of those who may have serious, life-threatening blood loss. As a result, unrecognized volume loss during the compensatory phase of hemorrhage can quickly lead to sudden, unexpected hemodynamic decompensation. The goal of this evaluation is to understand if we can recognize blood loss earlier using directed technology, and in turn enable better triage and earlier intervention to improve care and outcomes.

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## Pediatric Emergency Care Applied Research Network (PECARN)

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The Seattle Fire Department, the EMS Division, and Children's Hospital are collaborating to participate in PECARN, a federally funded pediatric emergency medicine research network. PECARN conducts high-priority, multi-institutional research on the prevention and management of acute illnesses and injuries in children. Several studies are in the planning and review process that would address strategies of seizure treatment, airway management, and cardiac arrest care. CEEMS investigators are also evaluating the interface between the caller and emergency dispatch in pediatric cardiac arrest to understand the challenges of cardiac arrest identification and caller coaching for CPR.

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## Brain Oximetry during Cardiac Arrest

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In many cases of out-of-hospital cardiac arrest, the arrest victim succumbs even though the heart has been successfully resuscitated. Most often this is due to global anoxic brain injury (starving the brain of oxygen), which emphasizes just how important cerebral oxygenation (getting oxygen to the brain) is during CPR. Thanks to recent advances in technology, the EMS Division is collaborating with Fire Departments to monitor brain oxygen levels during CPR. A pilot project was conducted collaboratively with the Puget Sound Regional Fire Authority, King County Medic One, and industry partners NONIN and Stryker. The pilot study demonstrated promising results indicating that the brain oximeter may be able to distinguish early-on who will recover brain function and who may have serious anoxic injury. Initial study results were published in 2021. Phase 2 involves collaboration with paramedics from the Redmond Fire Department to better determine the prognostic performance of the oximeter and how it may be used to improve care.



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## Ventilation in Pre-hospital Emergency Care

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During cardiac arrest and other critical emergency conditions, EMS often uses a special ventilation bag to provide "rescue breaths" to patients unable to breathe adequately on their own. The bag is placed on a special mask or an endotracheal "breathing" tube and squeezed to assist in the delivery of oxygen-rich breaths. Airway management interventions involve different levels of complexity and effectiveness that require different technologies and expertise.

With the help of novel technology from Philips Healthcare, the EMS Division and paramedics from the Bellevue Fire Department completed a pilot study evaluating the dynamics of these rescue breaths to optimize oxygen delivery and ventilation. For more information on the initial evaluation results, refer to page 20. The technology can provide a useful tool to assess how different emergency breathing strategies affect a patient's pulmonary physiology.

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## **New Strategies to Deliver Lifesaving CPR and Defibrillation: Verified Responder**

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The resuscitation of cardiac arrest relies on early CPR and early defibrillation. Even in communities with a mature emergency response, only about half of cardiac arrest victims receive CPR prior to EMS arrival, and less than 5% receive defibrillation prior to EMS arrival. Survival could be improved substantially if these formidable gaps in resuscitation care can be addressed.

The AED Lifesaver Early Responder Trial (ALERT study) enlists volunteer off-duty EMS professionals (Verified Responders) equipped with an AED to respond to nearby cardiac arrests using the PulsePoint phone app, potentially at any time and to any location or setting. This is an expanded version of a previous program where responses were limited to just public areas. The ability to respond to all locations - rather than just public locations - is significant, since approximately 80% of cardiac arrests occur in private residences. Thus the expanded version has the potential to decrease time from collapse to chest compressions and/or defibrillation for all patients.



This project brings together partners from the EMS Division, University of Washington, PulsePoint Foundation, and Philips Healthcare to work with capable communities across the US. Initial evaluation indicates the approach is safe and does have a measurable though modest impact in its current form. Ongoing efforts are evaluating how the PulsePoint platform can be strategically and effectively expanded to additional communities.

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## **Mentorship and Collaboration**

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Each year, affiliate clinicians and researchers, such as medical students, physicians and EMS professionals engage in evaluation and research under the mentorship of CEEMS staff. One ongoing program brings together CEEMS and medical students from the University of Washington. As part of the experience, CEEMS provides a structured "project home" for UW medical students to undertake research and rigorous scientific evaluation methods. The projects undergo ethics review and approval and involve special sessions to learn about the important role of EMS and understand some of the research methods used in such investigation. Ultimately, each medical student is integrated as part of the evaluation team with the goal of completing the project to help inform EMS strategies here in King County and often beyond. In the past year alone, several peer-reviewed publications have resulted from this collaboration, often advancing scientific understanding of critical illness and providing the means to improve outcomes. Recent projects with publications include:

- Physiological evaluation of bystander CPR in cardiac arrest: Biological mechanisms of survival benefit
- Airway generating procedures in the prehospital setting and the risk of COVID-19 exposure for EMS personnel
- The quality of bystander CPR: Opportunities to improve based on high-fidelity review



## Training & Education

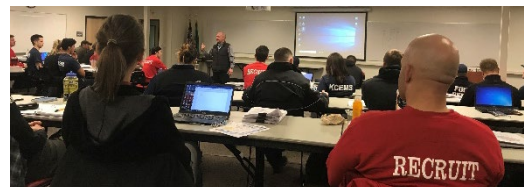
*The Training & Education Section is responsible for the initial training, continuing education, instructor training, and recertification oversight for approximately 4,400 Emergency Medical Technicians (EMTs) that practice throughout King County. It works collaboratively with its regional EMS partners and the King County Medical Program Director (MPD) to develop and support the curricula to meet state, national and agency requirements. In addition, the Training & Education Section serves as the liaison between King County's 28 fire agencies that provide basic life support services and the Washington Department of Health (WA DOH) in regard to initial certification, training authorizations, certification renewals, and regulatory or policy updates affecting the delivery of EMS.*

Recognizing the wide-reaching education needs of our regional partners, the Training & Education section fully extended itself to ensure there was ample training of our region's first responders, excellent online training content, continued training program coordination, and forward movement on the STRIVE strategic initiative.

We facilitated and supported 11 EMT training courses in 2022 where more than 400 EMTs received their initial certifications. This represents a near doubling of the number of EMTs trained the previous year. This number includes participants in the Strategic Training and Recruitment (STAR) program which provides training opportunities for traditionally under-represented students in an effort to increase the diversity of the EMS workforce (see page 37 for more information). We also provided additional instructional periods to supplement the more than 2,500 hours of clinical time that the region's EMT students lost due to COVID-19 restrictions on training in hospital emergency departments and ride-along opportunities.

The Section created eight nationally accredited online training courses to meet the state-mandated Ongoing Training and Evaluation Program (OTEP). This ensures that every one of the 60,000+ hours of online training taken by our regional first responders are applied to national and state certification. The Training Section facilitates efforts between the EMT, their fire agency, the King County MPD, the EMS Division, and the WA DOH to process the approximate 1,600 recertification applications each year.

In 2022, the EMS Division renewed its national accreditation through the Commission on Accreditation for Prehospital Continuing Education (CAPCE). This process required a systematic assessment of our online content, the review of our physician assisted QI/QA processes, and the evaluation of our training facilities and equipment. Additionally, CAPCE vetted and approved every person involved in the provision of online training, from medical oversight to course designer. The Strategic Transition in Regionalized Innovation, Value, & Education (STRIVE) strategic initiative made great strides this year. Steps taken will ready EMS Online's modernization implementation in early 2023. For more information on the STRIVE Strategic Initiative, please see page 41.



*We returned to in-person "train-the-trainer" Competency-Based Training (referred to as CBT) workshops where evaluators are prepared to support the ongoing training needs of the region's EMTs, paramedics, and dispatchers.*

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***As our EMS system continued to provide care post COVID-19 pandemic, the Training and Education section rose to the challenge in meeting the training demands of our region's first responders.***

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## Community Programs Section

*The Community Programs Section of the EMS Division makes countless connections throughout the EMS system and broader King County area. It offers a wide variety of public awareness and education program to an equally wide variety of communities, such as school aged children, adults, and EMS partners. This includes programs on Injury Prevention; Cardiopulmonary Resuscitation (CPR) and use of Automatic External Defibrillators (AEDs), recognizing medical emergencies and appropriately calling 9-1-1 for medical assistance, emergency medical dispatch training and quality improvement, and BLS response tier efficiencies that support referring patients to health and social services, transportation options for certain incidents, and other efforts to efficiently handle low-acuity calls.*

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### CPR and Public-Access Defibrillators Save Lives

Cardiac arrest is one of the most life-threatening of all prehospital medical emergencies. Numerous clinical studies have demonstrated that patients who receive early cardiopulmonary resuscitation (CPR) and early defibrillation have a significantly improved chance of survival from cardiac arrest. The EMS Division offers a number of programs to provide CPR and Automated External Defibrillator (AED) training to residents of King County, while also working to place these devices in public locations and encourage the public to register their AEDs.



The Community Programs Section has long been a strong leader and resource for providing CPR and AED training out in the community through CPR education in our public schools, community organizations and the King County government itself. While COVID-19 definitely impacted its ability to provide trainings in person, they were able to find “work arounds” or alternatives to ensure these critical activities could continue.



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### CPR Training

The Community Programs Division has traditionally focused on two populations when training King County employees - County staff who routinely engage with patients and populations at higher risk of cardiac arrest, and all other County staff who voluntarily seek training to maintain their CPR skills. COVID-19 restrictions resulted in concentrating this year on just those who must be certified in order to work, which is a wide-ranging group. By reducing class sizes to meet social distancing requirements but increasing the number of classes, all individuals who needed CPR training in order to perform their work at King County facilities were able to be accommodated. This was an extraordinary feat that took an exceptional amount of effort but highlights the commitment to providing training to those who work with higher risk individuals.



Another focus population for CPR training is high school students who must take CPR training in order to graduate. School CPR curriculum training is provided by the EMS Division to either school staff or firefighter/EMTs from nearby fire departments. During COVID-19-related school closures, the EMS Division provided flexibility, support and resources to school districts so that they could continue to meet this graduation requirement. This included going virtual with asynchronous training via videos and Zoom, and providing for weekend testing. Staff reformatted the 5-day curriculum into a one-lesson instruction unit that can be completed on a timeline that best fits instructors' schedules. In addition, a School CPR website was created to provide additional ideas, resources, and flexibility for providing CPR education and gave school districts multiple options to adapt CPR training for their specific classroom models.

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## AED Registry

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AEDs placed in high incidence/high risk locations provide a greater opportunity for citizens to provide CPR and defibrillation prior to the arrival of EMS units. Registering them lets dispatch centers alert callers to the nearest AED location, leading to early defibrillation and, quite possibly, saving a life. In 2021, we launched a new AED registration system and updated approximately 700 new or existing AED registry records. The Community Programs Section works with 1,400 registered AED owners representing 3,000+ unique site locations, and has more than 5,000 registered AEDs. Following the registration of an AED, King County EMS offers community partners organizations and businesses the opportunity to reserve one of our "CPR in a Box" kits which were highlighted in our 2019 Annual Report. This self-contained CPR training tool includes a manikin, instruction on proper CPR, and information on how to seek out additional training, and is an effective way to educate communities on CPR.



Innovative methods to achieve early defibrillation can dramatically improve survival from cardiac arrest. Equipping law enforcement officers with automatic external defibrillators (AEDs) is one such approach. Many agencies throughout the region have furnished their police vehicles with mobile AEDs for when they are the closest emergency vehicle to an incident and able to arrive before EMS. In 2021, there were more than 220 events where law enforcement officers performed CPR or applied an AED before EMS arrived. Arriving even one or two minutes before EMS can make a marked difference in the outcome, reinforcing that putting AEDs in the hands of law enforcement can improve our overall approach to cardiac arrest in King County.



*While registering an AED is important, so is keeping this information up to date. The Community Programs Section works to keep the registry as dynamic as possible.*

Overall, our Public Access Defibrillator and CPR programs at the EMS Division provide a critical support structure for improving outcomes when cardiac arrests occur. The more individuals are trained in CPR, made aware of AEDs, and the wider these devices are made available in the community, the more opportunities there are for people to survive cardiac arrest and maintain high neurological function.

## PulsePoint

Earlier this summer, PulsePoint went live in King County. PulsePoint is a free mobile app that alerts citizens when a cardiac arrest is occurring nearby so that they can begin CPR before first responders arrive. In addition to empowering communities to help improve patient outcomes and save lives, the app helps locate AEDs, and provides instruction on how to perform CPR. PulsePoint's expansion into King County is possible in no small part thanks to the EMS Division's extensive AED registry, its the public information campaign to register AEDs, and its various CPR and AED training opportunities highlighted above.



For more information about PulsePoint in King County, refer to the following link:  
<https://www.mediconefoundation.org/pulsepoint/>.

### PulsePoint Respond

CPR NEEDED

Use the address information and map to find the way to the scene.

### PulsePoint AED

#### Find an AED

Use the map below to locate AEDs in your area. If you've located or know of an unregistered AED, please report it through the PulsePoint AED app or our online [AED Registry Entry Form](#).

Showing 2492 AEDs



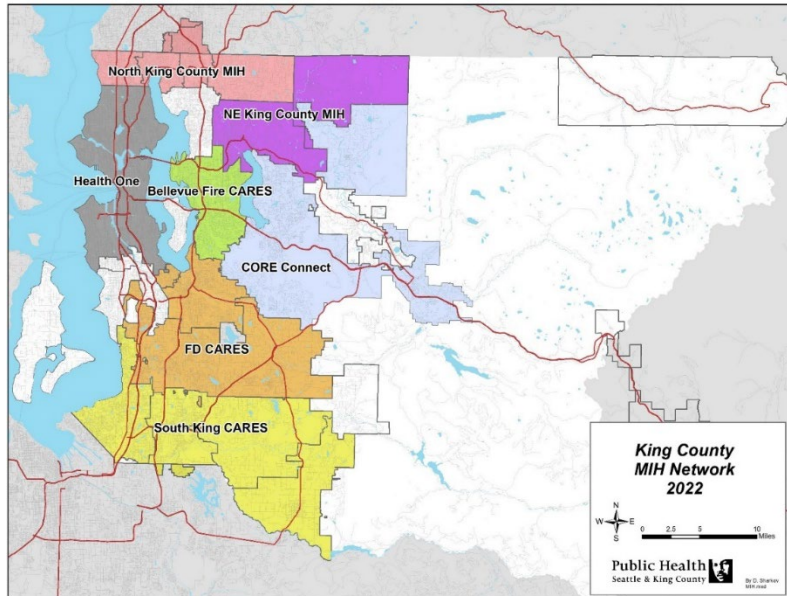
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## Mobile Integrated Healthcare

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While preparing our current Strategic Plan, EMS partners were committed to developing a Mobile Integrated Healthcare (MIH) model to address community needs regionwide. A total of \$26 million was included in the Financial Plan to help make the idea of a cohesive regional network a reality.

King County's MIH network now consists of seven programs throughout the region (involving partnerships across 21 fire departments), with several programs in the planning stages. While no "one size fits all," each program is comprised of an interdisciplinary care team and is tailored to meet their community's unique needs. Driven by local fire agencies, with regional support from the EMS Division, King County's MIH programs currently serve over 1.8 million residents (83%) of King County.



MIH programs and systems are designed to connect individuals with a wide array of health and social services. Through MIH programs, EMS personnel work closely and extensively with frequent callers, lower acuity callers, and patients requiring complex care to identify their root causes of need and navigate them to the appropriate health and social services. For those agencies using a response model, crews are able to stay on scene longer to help the caller; agencies with a referral model have MIH personnel follow-up with the patients after the call to assess their need and determine next steps. All programs have the ability to send a response unit if needed. By having mobile, community-based care teams dedicated to connecting callers to the correct resources, EMS is given the tools to provide a meaningful intervention and truly impact the patient's well-being.

In 2021, King County experienced a 56% increase in referrals from EMS to MIH. We also celebrated the launch of our region's newest MIH program, Eastside Fire & Rescue's CORE Connect program. Many MIH programs continue to grow their teams and expand into additional service areas to meet the growing demand for services.

## MIH, Fall Prevention and VPSI

In 2020-2021, approximately 60% of the MIH direct responses were related to falls. Additionally, falls and mobility issues were the leading reason for being referred to an MIH program for follow-up, accounting for 22% of referrals in 2021. Because falling once doubles your chances of falling again<sup>1</sup>, patients are routinely referred by MIH to the EMS Division's **One Step Ahead** fall prevention program.

This program is supported by a program manager and two health educators with backgrounds in physical and occupational therapy. The health educators identify fall risks and hazards that exist in the home, and reduce the chance of recurrent falls by installing equipment, working with primary care providers and removing trip hazards, among many other options.

When the pandemic disrupted the Fall Prevention Program's ability to work in-person with its clients, MIH stepped up to assist. Shoreline Fire's North King County MIH program joined forces with the fall prevention team to modify a home, helping to maximize a client's safety and

independence to enter and exit their home. The fall prevention team and MIH also collaboratively developed a fall lesson plan for limited English proficient (LEP) older adults to raise awareness of fall prevention through the Vulnerable Populations Strategic Initiative. In 2021, the team piloted the lesson plan in 2021 and intends to provide training workshops in 2022. Future plans include training people in the community to deliver this information to others in people's native languages and within different community groups.



<sup>1</sup>References: O'Loughlin J et al. Incidence of and risk factors for falls and injurious falls among the community-dwelling elderly. *American journal of epidemiology*, 1993, 137:342-54

## MIH Highlights Successes and Innovations

Taxi vouchers were piloted for use outside of the 9-1-1 call for MIH clients needing access to services to further their care. At least 45 rides were issued by MIH programs in 2021, most of which diverted clients to alternative, non-ED destinations. The success of the pilot led to the ongoing integration of MIH-issued vouchers into the Taxi Transport Voucher (TTV) program.

In 2021, Eastside Fire's CORE Connect program began implementing an overdose prevention Narcan Leave-Behind pilot project, in partnership with Public Health - Seattle & King County.

Some programs are exploring alternative funding sources, including through Medicaid's Treat and Refer reimbursement.

Multiple MIH programs continued to grow and expand by increasing staffing levels or adjusting staffing models, contracting with new service areas, and enhancing their data and assessment efforts (all but 1 MIH program is now using Julota as their case management software). The EMS Division also signed a contract with Julota in June 2022 for regional assessment purposes.

All MIH programs report partnerships across diverse community-based health and social services resulting in service connections and care coordination for their clients. Examples of successful partnerships include local hospitals, first responders, long-term care facilities, home health, hospitals and primary care, professional organizations, caregiving agencies, and more.

## Client and Provider Feedback

Starting in 2020, the EMS Division and regional partners (excluding Seattle) began implementing standardized data collection for regional assessment of MIH, including both quantitative performance metrics and qualitative feedback.

Client feedback continued to be positive across all reporting programs. This was indicated by voicemails, letters, and other expressions of appreciation from clients and their families to MIH for EMS's advocacy, support navigating complex services, and being a critical point of connection.

First responder feedback continued to be appreciative of MIH's approach in working with complex clients and taking the time to connect them to appropriate resources. Programs reported the importance of providing feedback to referring crews and providing frequent communication about MIH to keep the program in the forefront of first responders' minds.

## A Different Kind of First Responder

News of King County's MIH program circled the globe when it was featured in **Health Affairs**, a leading journal of health policy thought and research. The article focuses on the south King County FD CARES program and highlights the benefits that MIH brings to the community.

For more information, refer to the following link:

[A Different Kind Of First Responder | Health Affairs](#)



*Before joining FDCARES in King County, Washington, Daniel Henriquez had worked as an intensive care unit nurse. He regularly saw how poorly managed chronic health conditions, such as hypertension, ended with preventable tragedies, such as stroke or heart attack. Photograph by: Caeen Couto*

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***Community Programs has faced obstacles across the board throughout the COVID-19 pandemic because being in and amongst the community is foundational to much of the work. Despite limitations to in-person and community-based activities, Community Programs stepped up to the plate and found ways to ensure critical programs remain available throughout our region.***

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## King County Medic One

King County Medic One (KCM1) is one of the five Advanced Life Support (ALS) paramedic agencies in the regional EMS system. KCM1 now serves approximately 557 square miles of south King County, including Vashon Island, with a population that is now close to 750,000 people. In calendar year 2021, KCM1 responded to over 15,000 calls for advanced care, including cardiac emergencies, pediatric patients, mass casualty, and motor vehicle crashes.



This past year tested all aspects of King County Medic One (KCM1). As variants and surges emerged, paramedics stepped up to meet the demand as well as staffed COVID-19 testing and vaccination sites throughout the community. Training required to be both modified and modernized to ensure safety yet still maintain its excellence and even allow for future expansion. Added into this mix was the two highest call volume days in King County Medic One history overlapping with the two hottest days in the Pacific Northwest in recent memory. KCM1 is proud to say that it might have “bent”, but it did not break.

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### Leadership

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The region continues to experience a flood of retirements, and King County Medic One is no exception. Keith Keller, the Medical Services Administrator for five years, left in 2021 and Chief Andrea Coulson is now leading KCM1.

Chief Coulson joined King County Medic One in 1991 and was one of four women in class #18 at the University of Washington School of Medicine, Harborview Medical Center. After 29 years of playing numerous essential roles while at KCM1, she retired in 2020. However, the draw to serve the residents of King County was too great, and she returned to KCM1 as the Medical Services Administrator/Chief in late 2021. Andrea is committed to keeping the organization rooted in and true to its original charter, ensuring the continuation of its leading-edge medical care, and making KCM1 a more equitable and inclusive workplace.



*Chief Andrea Coulson inducted into her new role by outgoing Chief Keith Keller. Pictured above to the right is Chief Coulson in action as a paramedic.*

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## Training

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An unanticipated benefit to the pandemic was the adjustment to KCM1's training and the training division. Because gathering paramedics in one place for training was problematic, KCM1 leveraged emerging technologies against its plans to build a more robust training model. This resulted in updating and expanding the use of its training platform, leaning into the use of Zoom to connect the paramedics contemporaneously in a safe manner, and purchasing new motion-tracking cameras with associated software for blending the feed. These changes not only solved its immediate pandemic needs, but it will also allow for flexibility far into the future.

The value in these investments are many. A modernized training platform reaches a larger audience in a way that is convenient for students and instructors alike. Paramedics can personalize their learning paths and have greater flexibility by taking courses on an iPad or tablet. On-duty crews and those logging-in remotely can watch lectures in real-time despite not being in person. EMS personnel can access recorded and archived lectures and trainings through the training platform repository, selecting just the courses they need and on their own time. It boosts employee productivity, reduces operations and logistics costs, delivers content instantly, and especially important, it provides consistent excellent training, which is on what our EMS system is predicated.

The pandemic challenged EMS agencies in new ways. We continue to learn much and keep finding the silver-lining as we move through the pandemic with a better training model, a work force that maintains its standards through tough times, and many options for expansion into the future.



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***Whether it was evolving variants, unanticipated surges, or extreme weather, King County Medic One's paramedics once again rose to the challenge and adapted to whatever Mother Nature threw its way.***

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# 2020-2025 STRATEGIC INITIATIVES

## VPSI, STRIVE, AEIOU QI

The Medic One/EMS 2020-2025 Strategic Plan continues and implements Strategic Initiatives that leverage previous investments made by the region to improve patient care and outcomes. Areas identified include sustaining focus on vulnerable populations, enhancing quality improvement capabilities, and modernizing the continuing medical education program.

Based on the regional needs and issues identified by partners over the course of levy planning, the following strategic initiatives are centered on using a solid regional approach to strengthen standardization, coordination, inter-connectedness and partnerships:

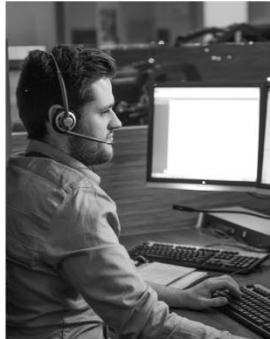
### 2020-2025 STRATEGIC INITIATIVES



**VPSI**  
*Vulnerable  
Populations  
Strategic  
Initiative*



**AEIOU QI SI**  
*Accelerating  
Evaluation &  
Innovation: An  
Opportunity for  
Unprecedented  
Quality  
Improvement*



**STRIVE SI**  
*Strategic  
Transition in  
Regionalized  
Innovation,  
Value, and  
Education*





## Vulnerable Populations Strategic Initiative (VPSI)

The **Vulnerable Populations Strategic Initiative (VPSI)** represents a unique collaboration between Public Health – Seattle & King County, the EMS Division, fire departments, community-based organizations, and the University of Washington. Founded in 2014, VPSI aims to ensure that EMS provides the best possible care to all King County residents regardless of race, ethnicity, age, socioeconomic status, culture, gender, or language spoken.

### Focal Areas & Objectives

VPSI includes five focal areas with the following objectives:

1. **Community Education and Outreach:** Conduct 9-1-1-related education and outreach activities in communities that are vulnerable to health disparities
2. **Fire-Based Pilot Studies:** Conduct pilot studies on alternative EMS care delivery to populations requiring complex care
3. **UW Partnership:** Support the collaboration between UW School of Public Health and VPSI
4. **Mental Wellness:** Assess and address mental wellness needs among King County EMS personnel
5. **Equity and Social Justice (ESJ):** Build career paths in EMS to promote a diverse workforce, and integrate ESJ values into the EMS workplace.

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### Education and Outreach Mid-Levy Review

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Community education and outreach efforts focus on reducing barriers for communities that are vulnerable to health disparities, including Limited English Proficient (LEP) individuals and seniors, to promote access to 9-1-1 and EMS services. Community partners include Seattle Office of Emergency Management, the Somali Health Board, the Chinese Information & Service Center, Saint Vincent De Paul's Centro Rendu, and the University of Washington. The community partners develop and deliver culturally appropriate education in various languages on calling 9-1-1, performing bystander CPR, recognizing stroke, hypertension, and falls prevention.

This year, in partnership with the UW School of Public Health, we conducted a mid-levy review of the community education and outreach component of VPSI. The findings of this assessment can be used to inform activities for the remainder of this levy period (2020-2025), as well as strategic planning for the next levy period (2026-2031).

The COVID-19 pandemic had a significant effect on VPSI outreach and education activities during the first half of this levy period. While some components of the pandemic were challenging, including the shift to virtual settings, new innovative engagement strategies also allowed for broader reach, and most partners envision a hybrid future of virtual and in-person engagement.

So far this levy period, VPSI partners have created new educational materials, conducted brief education in the form of outreach, and facilitated in-depth workshops on various EMS-related topics in a wide variety of settings and languages. More details about these activities can be found in the [VPSI Mid-Levy Review Report](#).

From 2020 - 2021, the VPSI partners delivered EMS education to over **17,950 individuals** through over **160 in-person and virtual outreach events** focused on Limited English Proficient individuals, older adults, and other vulnerable communities of King County. As part of the nearly **700 workshops** that were taught by VPSI partners on a variety of EMS topics, approximately **1,100 individuals received bystander CPR education.**

Through interviews, key partners provided feedback on the challenges and successes of VPSI, as well as opportunities for improvement, as described in the VPSI Mid-Levy Review Report. Based on these findings, the following recommendations were proposed for implementation in the remainder of this levy period and/or in future levy planning:

### **Supporting current partners to continue and advance their work**

- Technical assistance and skill-building for current partners
- Sharing lessons learned and enhancing collaboration with one another
- Evaluation, assessment, and quality improvement support
- Expanding reach by scaling up the train-the-trainer model

### **Enhancing collaboration between community partners and fire departments**

- Promote career pathways into EMS as an integrated component of VPSI
- Expand dissemination of EMS information to new language communities
- Explore the connection and opportunities for collaboration between Mobile Integrated Healthcare (MIH) and VPSI, which both serve communities vulnerable to health disparities

### **Leveraging partnerships and aligning with Public Health's enhanced approach to community engagement, in collaboration with Public Health's new Office of Equity and Community Partnerships**

- Authentic community engagement
- Support community input to identify priorities and look beyond what data can show
- Intentional identification of priority populations and new and emerging topics

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## **Fire-Based Pilot Studies**

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Over the past year and with the support of UW graduate students, VPSI completed an evaluation of the OneCall pilot study, which tested a new linkage between fire departments and Crisis Connections' single portal referral service for clients with mental health needs. During the 18-month pilot timeframe, OneCall was accessed for 470 unique clients, and in the 3 months after OneCall, clients' EMS incidents decreased by 26%. Additional evaluations findings, including strengths, challenges, and recommendations for next steps, can be viewed in the [OneCall Evaluation Report](#).

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## Workforce Mental Wellness

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The prolonged COVID-19 pandemic continues to impact the mental wellness of many first responders in the region. Over this past year, the Mental Wellness Subcommittee of the King County Fire Chiefs Association sponsored webinars on resiliency and sound financial health as well as several peer support trainings to ensure first responders have access to peer-based expertise. On May 4, 2022, a Self-Care Retreat for Executive Leadership was held to create a space for EMS/Fire leadership to recognize the traumatic impacts of the pandemic and learn tools for healing and self-care.

A mental wellness survey to assess the levels of burnout amongst first responders in King County was conducted to better understand the various factors that may cause or are associated with burnout. Results are currently being finalized and will be published in the near future.

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## Equity and Social Justice (ESJ)

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To promote ESJ throughout EMS, VPSI focuses on building career paths to create a diverse workforce. Through targeted outreach, recruitment, and training programs, such as the Strategic Training and Recruitment (S.T.A.R) program and Future Women in EMS and Fire (FWIEF), EMS aims to build a workforce that reflects the diverse communities it serves.

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## Strategic Training and Recruitment (S.T.A.R) Program

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Fostering an EMS workforce that reflects the demographic makeup of Seattle and King County and providing training opportunities for those that are traditionally underrepresented in the EMS workforce are two goals of the S.T.A.R Program.

These are accomplished by:

1. bringing awareness of the S.T.A.R program and opportunities to work in EMS to the community;
2. covering the high cost of traditional EMT training programs; and
3. creating an environment for S.T.A.R students where they are included and able to successfully complete the course and obtain their EMT certification.



S.T.A.R students complete a 14-week EMT course alongside King County fire agencies and other public service agencies. Feedback is continuously sought from both students and instructors from each class to identify areas where the program can be improved to ensure the success of the students. As a result, we amended the application and interview process, and developed mentorship opportunities, employment workshops, and study groups that have assisted students in completing the class, passing the National Registry EMT exam, and receiving job offers at fire agencies and private ambulance companies.

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## Future Women in EMS and Fire (FWIEF) Workshop

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Since 2018, King County EMS has partnered with various Fire Departments to sponsor **Future Women in EMS and Fire Workshops (FWIEF)**. Geared to encourage women to join the fire and EMS service as a career, this bi-annual weekend experience includes interactive interview panels, hands-on stations, lectures, and real-life demonstrations. All instructors are current providers in King County and offer great insight, advice, empowerment, and opportunities to answer questions women who are seeking a career in the service may have.

The workshops are a collaboration among the different EMS and Fire department throughout King County and is completely run by women from these different fire departments.

Host agencies vary and alternate between the north and south so that all departments can have an opportunity to showcase the characteristics and culture specific to their agency. It is an application-based workshop, and consists of 32-36 participants, over 40 instructors, and has representation from over 18 different agencies from King County.

Attendees have provided positive feedback and told of their experience successfully navigating the testing process and being hired by agencies throughout the county. However, there is still work to be done, as some of responses to follow-up surveys have indicated there are still many challenges that women faced while going through the testing and hiring process and completing the fire academy. Through its various focal areas, VPSI aims to embody multiple ESJ goals as reflected in the King County ESJ Strategic Plan, including:

- Investing in community-based partnerships where the needs are greatest;
- Creating an equitable and inclusive workplace with ESJ-focused workforce development; and
- Partnering with agencies who provide services to LEP and engage communities in ways that are inclusive and culturally responsive.



## AEIOU QI Strategic Initiative

The AEIOU QI strategic initiative builds upon the past decade's technological advancements of records management and electronic data to improve patient care. The objectives of this strategic initiative include:

- **Accelerating case-based feedback and outcome** by improving the timeliness, quality, and access to data, investments in technology, and integration across platforms across the EMS system
- **Evaluating near real-time information** through systemwide regional quality improvement and surveillance. This allows us to monitor conditions of focus (e.g., cardiac arrest, stroke, opioids) and increase support to EMS agencies to conduct operational and clinical run reviews of EMS care and patient outcomes at the regional and local agency level
- **Innovation by conducting pilot projects** to strengthen quality improvement capabilities
- **Opportunities to increase King County EMS' coordination role** by convening regional partners to lead quality improvement projects and address the need to meaningfully use the wealth of data available
- **Unprecedented ability to improve our approaches to quality improvement through training and education**

### Cardiac Case Review Program: Expanding Feedback to Telecommunicators



The EMS Division expanded its Cardiac Case Review Program this year by reviewing and delivering near real-time feedback to dispatch center personnel involved in an out-of-hospital cardiac arrest incident. Telecommunicators play a key role in cardiac arrest resuscitation. They are often first to recognize when a cardiac arrest occurs and provide crucial instructions to callers on how to perform telephone cardiopulmonary resuscitation (T-CPR).



Cardiac arrest feedback focuses on two key questions: 1) What can we measure? and 2) Where can we improve? It should include each link in the "chain of survival" to achieve improved outcomes. As expected, there are many considerations when developing a quality improvement feedback loop for out-of-hospital cardiac arrests treated by first responders.

1

#### Communication Center Relationship

EMS established relationships between communication leadership centered on quality improvement.

2

#### Data Availability

Identify what data is routinely collected and available for measurable review. Are 9-1-1 recordings and computer-aided dispatch reports accessible?

3

#### Measurable Metrics

Identify what metrics are important and measurable for the EMS system. Repeatability is important to be able to generate benchmarks.




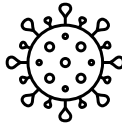

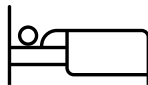
4

#### Feedback Delivery

Determine how feedback will be delivered and by whom. Feedback should always focus on opportunities for quality improvement.

## Contributing to Public Health Initiatives: The Value of EMS Data

Responses to emergency medical conditions such as opioids, firearm injuries and extreme weather events are valuable sources of information for Public Health. EMS data often represents an early indicator to inform trends in the types of emergency medical incidents occurring and where help may be needed in certain communities. The EMS Division continues to invest in tools to enhance its analytical capabilities to meaningfully use data and information. EMS data is used to informing the following public health focus areas:

<p><b>Identifying Opioid Overdoses in Communities</b></p>  <p>EMS responses to opioid overdoses increased by 133% from 2020 to 2021. Near real-time EMS data aids communities in identifying potential clusters of non-fatal opioid overdoses. EMS continues to refine its methods to identify opioid overdoses. Future efforts will include collaboration with Public Health and fire departments to implement pilot programs for outreach and education and supply naloxone to its communities. For more information, refer to page 15.</p>	<p><b>The Impact of Firearm Injuries</b></p>  <p>EMS responses to firearm injuries has continues to rise steadily. Public Health's newly launched public-facing dashboard features near real-time EMS data, including the total number of EMS incidents involving firearms injuries, demographic data, and a geographic map of where these incidents occur. This information helps to aid Public Health and other regional partners to provide access to critical programs aimed at reducing gun violence. For more information, refer to page 17.</p>
<p><b>Climate Health: Extreme Weather Events</b></p>  <p>EMS data plays a key role in monitoring any trends in emergency medical incidents such as heat exhaustion. During the extreme heat event, we experienced a significant increase EMS responses during the June 26-28, 2021 heat event. EMS data informed the distribution of Public Health resources (e.g., cooling centers) during the extreme weather events and regional coordination. In the extreme weather events, EMS data helped to coordinate targeted Public Health education and outreach efforts to the community. For more information, refer to page 12.</p>	<p><b>COVID-19 Pandemic Response</b></p>  <p>EMS data continues to provide situational awareness during the COVID-19 pandemic. EMS responses involving COVID-19 confirmed and probable patients have identified potential locations such as long-term care facilities that may be in need of Public Health resources. Additionally, the EMS Division partnered with the Assessment, Policy Development and Evaluation to develop a dashboard to identify trends in EMS incidents involving behavioral health issues such as suicidal ideation. For more information, refer to page 7 of this annual report.</p>
<p><b>Death Investigations</b></p>  <p>EMS records inform death investigations performed by the Medical Examiner's Office and Child Death Review Program. In accordance with State of Washington's Revised Code, sharing this information is often helpful in aiding death investigations performed by these programs to understand pre-hospital patient care and actions taken by EMS in the field.</p>	<p><b>Strategic Planning: Caring for Patients at Public Health Housing Sites</b></p>  <p>Emergency medical services may often be needed at Public Health housing sites for COVID-19 patients, or those that are in need of transitional housing. Information such as EMS responses to these locations have provided insight into the staffing needs to provide the best care for individuals needing specialized care.</p>

# STRIVE Strategic Initiative

The Strategic Transition in Regionalized Innovation, Value, & Education (STRIVE) strategic initiative (STRIVE) SI modernizes the online King County EMS continuing medical education (CME) platform, EMS Online, to meet the changing educational, data, and technological needs of the eLearning environment. This SI will address cross-platform functionality by implementing a Learning Management System (LMS) and extending the LMS functionality to agencies not yet using a LMS platform. The ability to export data would increase, allowing agencies to share and collaborate regionally as desired, and also customize training, based on needs. It would reduce duplication, increase efficiency, and support the region in meeting the eLearning expectations of our EMS workforce members.

Having heard the region’s concerns about the EMS Division’s online training system, Training & Education has moved forward in earnest with the EMS Online modernization strategic initiative. The project will be transitioning out of the capitalization stage without causing any disruption to the training and education section’s core mission of offering impactful online content. The business analyst onboarded in 2021 has continued their guidance through 2022, and we completed the conceptual and architectural system design with review and approval from the regional the regional ALS and BLS Working Groups and the EMS Advisory Committee. This developmental resulted in acquiring capitalization authorization from the King County Council, completing the vendor identification process, and preparing EMS Online to be updated in early 2023.

The screenshot shows the EMS Online website interface. At the top left is the logo "EMS Online emsonline.net". The main heading reads "EMS Online is a continuing education resource that offers online, interactive courses and content for emergency medical service professionals." Below this is a photo of a Seattle Fire Dept. ambulance with a paramedic standing next to it. A blue banner below the photo says "Learn from the community who has the best cardiac survival rates in the nation". To the right is a login section titled "EMS ONLINE SUBSCRIBER" with fields for "username" and "password", a "SIGN IN" button, and links for "Forgot your username or password?" and "Question? Contact Tech Support...". Below the login section is a "COVID-19 / Update 1/14/2022" banner with a red and white virus graphic and the text "KC EMS Directives and Information Learn more...". Underneath is a "WHAT PEOPLE ARE SAYING" section featuring a testimonial from Deanna Volk, Official Manager of Iron County Ambulance Service, who says: "Thanks for putting together a great interface for learning the program using EMS Online! We look forward to another wonderful year was well done!". At the bottom of the page are logos for Public Health Seattle & King County, Seattle Fire Dept., Pierce County Fire Dept., King County Fire Dept., and Harborview Medical Center UW Medicine. A copyright notice at the very bottom reads "©2001-2022 Seattle/King County Emergency Medical Services. All Rights Reserved. About this Website Technical Support".

## EMS Statistics: 2021 Operations & Key Performance Metrics

### 2021 Overview

The EMS system experienced significant impacts with the emergence of the COVID-19 pandemic resulting in declining call volumes and response times. As we move forward post-pandemic in 2021, we are beginning to see a return to normal trends comparable to years prior to the pandemic. The operational metrics and key performance measures presented in our EMS Statistics section reflect data collected from January 1, 2021 to December 31, 2021. We continue to make investments in technology to collect and analyze data from 9-1-1 dispatch centers, EMS agencies, and hospitals due to the regional use of a single records management system and integration across technology platforms.

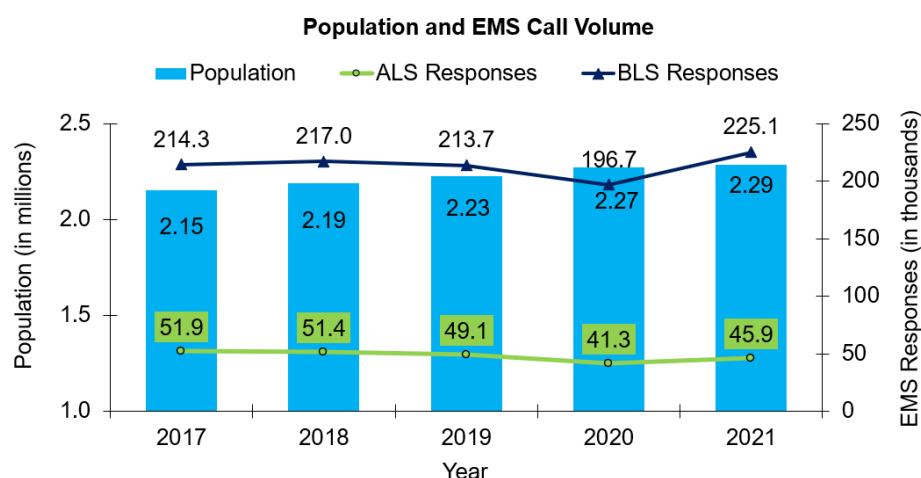
### Population

King County is the largest metropolitan county in the State of Washington in terms of population, number of cities (39), and employment. Ranked the 13th most populous county in the United States, King County's population growth remained steady through 2020, followed by a decrease of nearly 1%. For the past three decades, King County's population increased by 15%, representing an increase of nearly 300,000 people, spanning across a geographic region of 2,132 square miles and 1,713 square miles of unincorporated King County.

Year	Population	% Growth (Annualized)
1990	1,507,305	1.87%
2000	1,737,034	1.52%
2010	1,931,249	1.12%
2020	2,269,675	1.75%
<b>2021</b>	<b>2,287,050</b>	<b>0.77%</b>

Population serves as an important indicator to predict the trend in the number of emergency medical responses<sup>1</sup>. This means that the demographic profile of King County matters: When King County's population increases, the number of emergency medical responses (call volume) typically increase. As King County's population decreases, the number of EMS responses will typically decrease. Historically, calls for both BLS and ALS typically decrease during times of economic recession. The distribution of calls between ALS and BLS have also changed with revisions to criteria-based guidelines which identifies the most appropriate resources to respond to an EMS incident.

The graph to the right shows the strong correlation of population increases to the number of basic life support calls. ALS calls remained relatively stable across years 2017 to 2019, except for 2020, which decreased dramatically in due to COVID-19, followed by a return to normal in 2021.

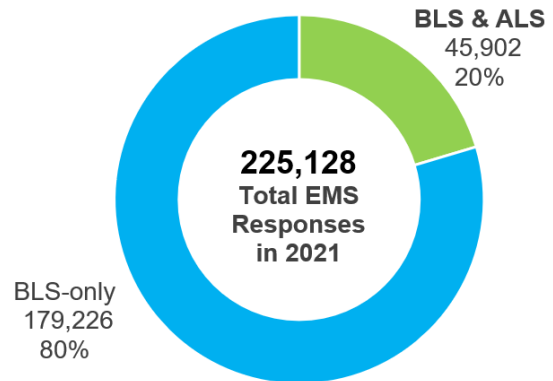


<sup>1</sup> [https://ofm.wa.gov/sites/default/files/public/dataresearch/pop/april1/ofm\\_april1\\_poptrends.pdf](https://ofm.wa.gov/sites/default/files/public/dataresearch/pop/april1/ofm_april1_poptrends.pdf)



## Call Volume

EMS responded to 225,128 calls in 2021 – a nearly 20% increase compared to 2020 calls (196,729). In the tiered EMS response system, BLS responds to 100% of all EMS calls. Of the total EMS responses, BLS-only responses accounted for 80% (179,226) of all total calls BLS and ALS jointly responded to 45,902 calls, representing 20% of all EMS responses. Cancelled enroute calls accounted for approximately 20.8% (9,541) of all ALS calls compared to 3.6% of all BLS calls (8,165).

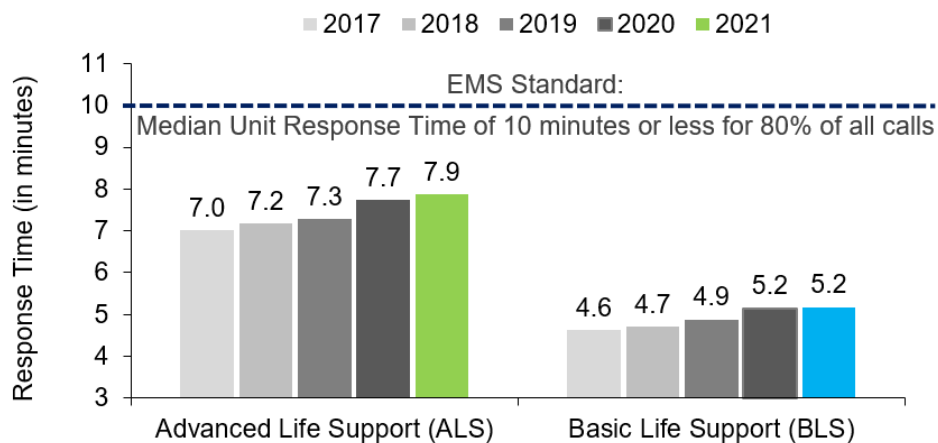


## Response Time

Response time serves as a key performance indicator of operational efficiency in any EMS system. Two important metrics include the total response time – the time between the 9-1-1 call being received by the 9-1-1 dispatch center and the EMS unit's arrival on scene – and the unit response time. The unit response time is the time between the unit dispatched and EMS arrival on scene. Across the last five years, ALS consistently met the standard performance goal of a median response time of 10 minutes or less, and 80% of all calls within 14 minutes or less.

### 2017-2021 Median Unit Response Time (in minutes)

(Time of unit dispatch to arrival at scene)



### ALS Median Response Times (RT)

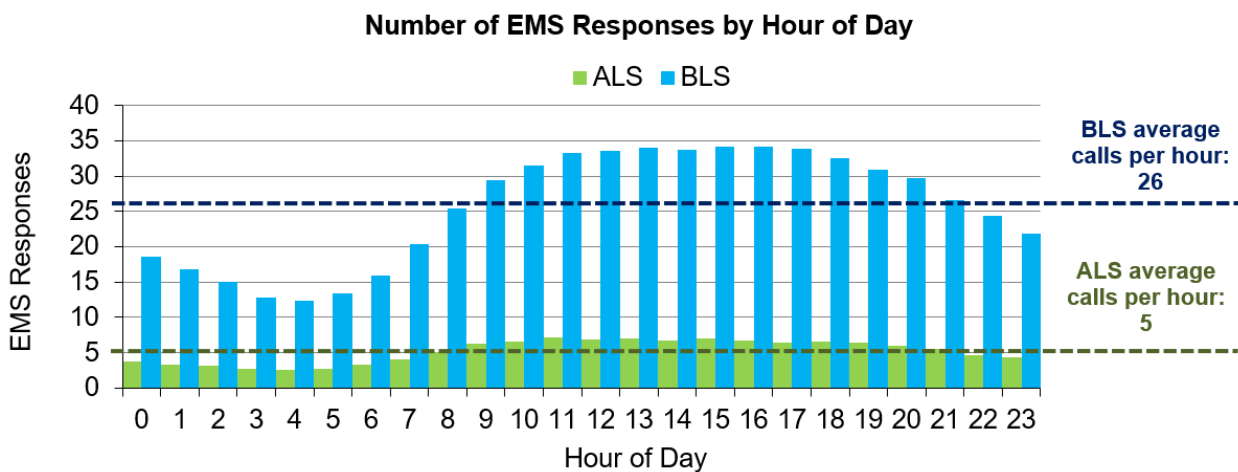
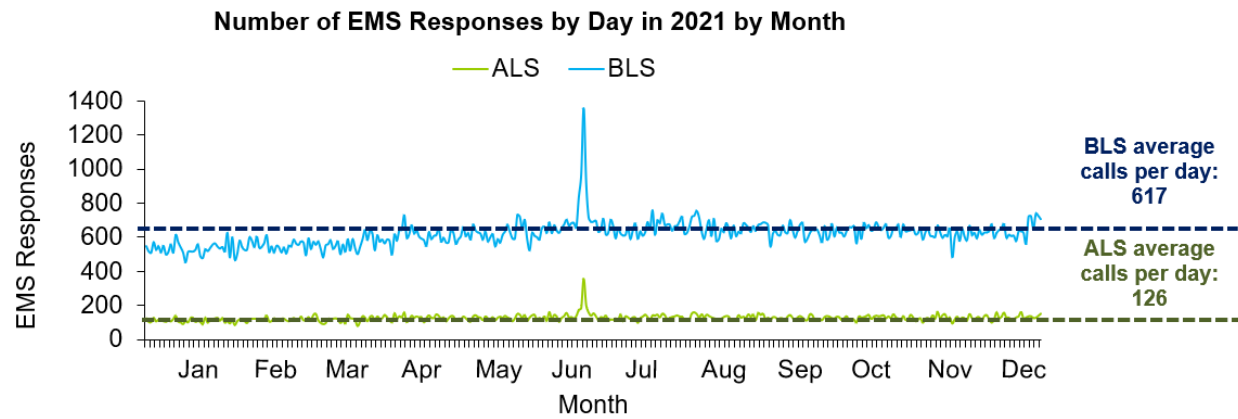
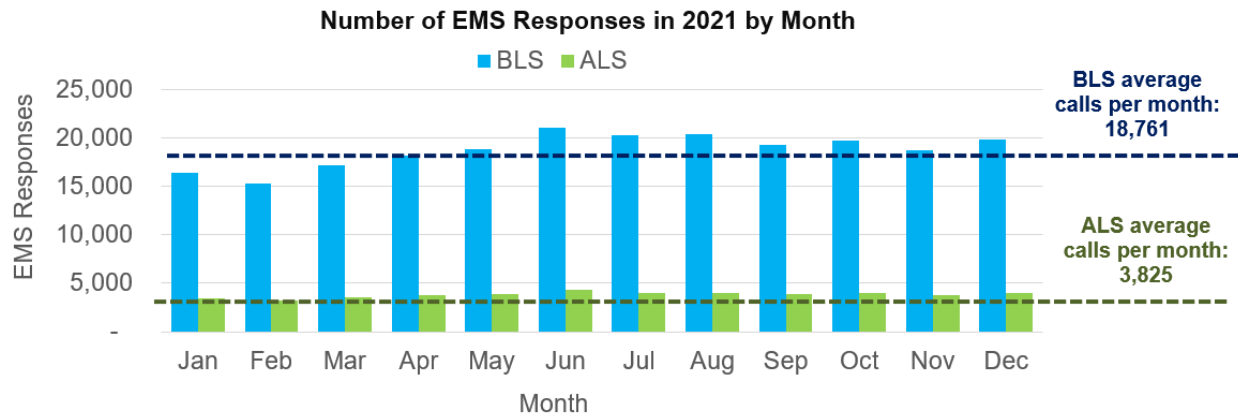
Measure	Dispatch Time	Unit RT	Total RT
Median Time (in minutes)	1.75	7.87	11.1
8 minutes or less	78.2%	51.8%	22.7%
10 minutes or less	81.9%	73.4%	41.3%
12 minutes or less	86.0%	86.2%	55.9%
14 minutes or less	89.5%	92.4%	65.6%

### BLS Median Response Times (RT)

Measure	Dispatch Time	Unit RT	Total RT
Median Time (in minutes)	1.02	5.18	6.48
6 minutes or less	95.9%	64.2%	41.7%

## Characteristics of Responses

The following graphs reflect the patterns of ALS and BLS responses in 2021. Notably, EMS saw a 100% increase in EMS calls during the extreme heat event spanning from June 26 to 28, 2021. On average, EMS receives 22,586 calls per month, 743 calls per day, and 31 calls per hour.



## EMS Call Types

EMS responds to a wide variety of emergency medical calls. In 2021, nearly 50% of ALS responses involved serious, life-threatening emergencies such as cardiovascular, respiratory, and neurological calls, with a higher percentage of calls to patients 65 years or older. BLS responds to 100% of all calls which are comprised of nearly 20% involving trauma, with a higher percentage of patients who are 65 years or younger.

Medical Type	ALS	BLS	Age	ALS	BLS
Cardiovascular	8,390 (28.3%)	14,333 (8.0%)	0-4	779 (2.4%)	3,987 (1.9%)
Respiratory	3,634 (12.3%)	12,956 (7.3%)	5-9	234 (0.7%)	1,569 (0.8%)
Behavioral/ Psychological	3,228 (10.9%)	21,548 (12.1%)	10-17	623 (1.9%)	5,027 (2.4%)
Neurological	2,910 (9.8%)	17,939 (10.0%)	18-24	1,416 (4.3%)	12,577 (6.1%)
Trauma	2,356 (7.9%)	38,321 (21.4%)	25-44	6,127 (18.7%)	49,640 (24.2%)
Alcohol/Drug	1,802 (6.1%)	11,574 (6.5%)	45-64	9,718 (29.6%)	51,444 (25.0%)
Abdominal/ Genito-Urinary	1,324 (4.5%)	15,250 (8.5%)	65-84	10,486 (32.0%)	57,222 (27.8%)
Endocrine/ Metabolic	905 (3.1%)	2,835 (1.6%)	85+	3,426 (10.4%)	24,008 (11.7%)
Allergy/ Anaphylaxis	633 (2.1%)	1,570 (0.9%)	<b>Total</b>	<b>32,809</b>	<b>205,474</b>
Infection	538 (1.8%)	4,730 (2.6%)			
Obstetric/ Gynecological	277 (0.9%)	925 (0.5%)			
Environmental	167 (0.6%)	770 (0.4%)			
Obvious Death	124 (0.4%)	2,584 (1.4%)			
Other Medical	3,374 (11.4%)	33,341 (18.7%)			
No Injury/ Illness	298 (1.3%)	19,133 (10.7%)			
<b>Total Medical Calls*</b>	<b>29,662</b>	<b>178,676</b>			

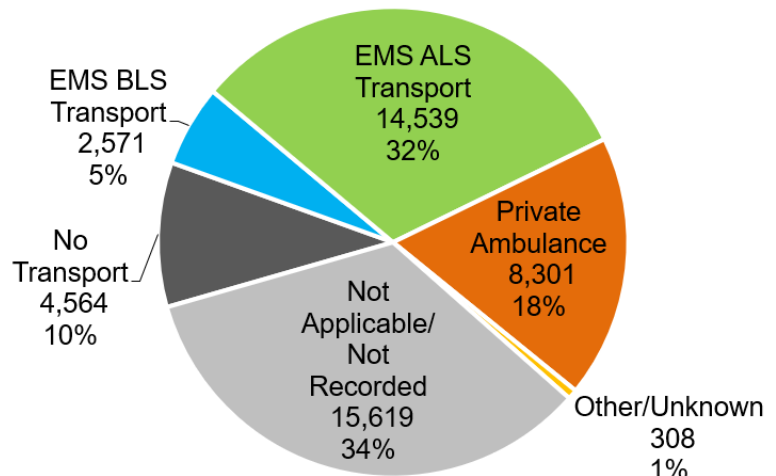
Total medical calls exclude non-medical calls (i.e., standby, cancelled)

## Transport Type

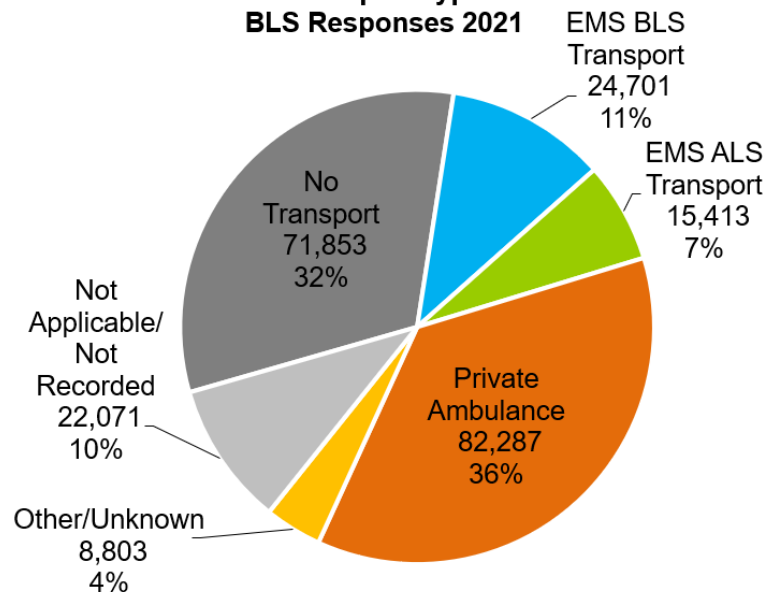
An important component of providing EMS care is appropriate triage. Once a patient is stabilized, EMS personnel use their skills and knowledge to determine whether transporting the patient to a hospital is needed for further medical attention. Based on the clinical needs of the patient, a decision to identify the most appropriate transport resource is made. The graphs shown below identifies the transport types for EMS responses across 2021, broken into two categories for ALS and BLS responses.

- EMS ALS ground transport via medic units and ALS air transport (e.g., Airlift Northwest)
- EMS BLS transport by fire departments via aid cars
- Private ambulance partners (e.g., AMR, Tri-Med, Northwest Ambulance, Falck)
- Other methods which may involve private vehicles such as taxis, cabulances or transport by a family member or friend
- No transport may occur if a patient refuses transport, or if it is deemed that transport is not needed
- Not applicable or not recorded includes EMS responses that are cancelled enroute or at scene, and/or if a patient cannot be located, and is not present

**Transport Type  
ALS Responses 2021**



**Transport Type  
BLS Responses 2021**



# Cardiac Arrest Statistics

## Seattle & King County 2021 Overview

Cardiac arrest is a public health challenge with stark health consequences. It occurs when a person’s heart stops working suddenly, often without warning. As a consequence, blood stops circulating and the body is deprived of oxygen. The person collapses, loses consciousness, and their breathing becomes agonal (gasping) or stops completely. The sudden nature of cardiac arrest always leads to death unless there is rapid action by a series of rescuers.

The assistance during those immediate first few minutes of a cardiac arrest is the most critical. This quick and coordinated action has been described by the “links in the chain of survival” that include prompt recognition, early CPR (chest compressions to resume or improve blood circulation) and defibrillation (electrical shock to restore the heart’s rhythm), and advanced EMS and hospital care. The actions taken by laypersons, law enforcement, telecommunicators and EMS personnel (firefighter/EMTs and paramedics), and hospitals influence the chances of a successful resuscitation. Success is defined when the arrest victim is resuscitated and ultimately discharged alive from the hospital. This measure of success is a key benchmark for a regional EMS system. Seattle and King County uses a comprehensive surveillance system to capture and review each cardiac arrest as the foundation to continuously strive to improve patient care and health outcomes.

### Cardiac Arrest Data Reporting

Cardiac arrest data reported each year combines both Seattle and the balance of King County, providing a snapshot of outcomes and treatment for two specific groups of cardiac arrest victims:

Overall Group	Utstein Group
Persons suffering arrest who are two years or older who received ALS treatment and had no advanced directives to limit care	Persons in the overall group whose cardiac arrests were witnessed by bystanders are primarily due to a medical condition of the heart with an initial heart rhythm that requires a defibrillator shock.

Although cardiac arrest calls comprise only about 1% of the total EMS call volume, performance and outcome are considered good proxies for the performance of an entire EMS system. This is because cardiac arrest resuscitation tests every component of the emergency response. The “Utstein” group provides a closer look at a specific population of cardiac arrest patients for whom each link in the chain of survival has special importance. This particular group was defined nearly three decades ago when the international community recognized a need for standardization for reporting about cardiac arrest to help compare performance across different systems. As a result, the Utstein cardiac arrest survival rate is considered the benchmark for EMS systems. Although special emphasis is placed on the Utstein group, both groups are informative and drive quality improvement initiatives and innovative practices to enhance care.

The following page presents results from the cardiac arrest surveillance system from years 2017-2021 for Seattle and King County. The report presents 2021 results and five-year cumulative results. The five-year cumulative results provide the best general gauge of EMS system performance as there can be year-to-year variability caused by circumstances outside the EMS system control.

## 2021 Cardiac Arrest Statistics – Seattle and King County

1. Overall number of cardiac arrests for which ALS resuscitation efforts were attempted for patients two (2) years or older with no advance directives to limit care:

Year	2017	2018	2019	2020	2021
Cardiac Arrests	1,215	1,298	1,308	1,350	1,499

2. 2021 Highlight: Overall survival to hospital discharge based on arrest before or after arrival of EMS personnel and initially monitored cardiac arrest rhythm:

Initial Cardiac Arrest Rhythm	Patients Treated	Patients Survived to Hospital Discharge	Percent Survived
<b>Arrest <u>Before</u> Arrival of EMS</b>	<b>1,292</b>	<b>188</b>	<b>15%</b>
Ventricular Fibrillation/ Pulseless Ventricular Tachycardia (VF/pVT)	285	110	39%
Asystole	629	10	2%
Pulseless Electrical Activity (PEA)	262	37	14%
Not Shockable, unknown if PEA or asystole	81	6	7%
Pulse on First Check	30	22	73%
Unknown	5	3	60%
<b>Arrest <u>After</u> Arrival of EMS</b>	<b>207</b>	<b>54</b>	<b>26%</b>
Ventricular Fibrillation/ Pulseless Ventricular Tachycardia (VF/pVT)	47	26	55%
Asystole	46	9	20%
Pulseless Electrical Activity (PEA)	110	18	16%
Not Shockable, unknown if PEA or asystole	2	0	0%
Pulse on First Check	1	1	100%
Unknown	1	0	0%
<b>Total</b>	<b>1,499</b>	<b>242</b>	<b>16%</b>

3. Utstein Group: Survival to hospital discharge for non-traumatic arrests, witnessed by bystanders (excludes EMS-witnessed), with an initial rhythm of ventricular fibrillation/pulseless ventricular tachycardia (VF/pVT):

Year	2021	5-year Cumulative Total 2017-2021
Survival Rate	89/194 (46%)	523/1,023 (51%)

4. Overall CPR initiated by bystanders, limited to arrest before arrival of EMS personnel:

Year	2017	2018	2019	2020	2021
Bystander CPR	763/1,084 (70%)	747/1,114 (67%)	840/1,112 (76%)	880/1,157 (76%)	966/1,292 (75%)

## Summary of Key Points for 2021

The EMS system treated the greatest number of cardiac arrests in 2021, resulting in our largest year-over-year increase of 11% compared to the prior year.

The EMS system successfully resuscitated **16% of all EMS-treated cardiac arrest victims** in Seattle and King County, a success rate two to three times higher than most communities.

This 16% represents **242 lives saved by the EMS system**, most of whom return home to resume their lives with loved ones, friends, and colleagues.

**Survival to hospital discharge was 46%** for arrests among the Utstein group. Although lower than previous years, this rate represents an achievement rivaled by only a handful of exceptionally proficient EMS systems from around the world.

The **bystander CPR rate of 75% remained high for the EMS system, similar to 2020**. Bystander initiation of CPR is often due to the immense efforts of telecommunicators providing CPR instructions in challenging and highly stressful situations.

## Cardiac Arrest Highlight

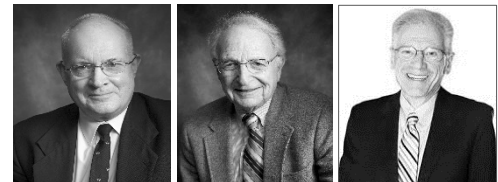
### Excellence through Ongoing Quality Improvement

Cardiac arrest occurs when a person's heart suddenly stops beating effectively, causing the person to become unconscious and unresponsive. Unless resuscitation is initiated early on, death will ensue. This time-sensitive, coordinated, and expert response brings together the links in the "chain of survival" (early recognition, early CPR, early defibrillation, and expert advanced care) and involves all aspects of the EMS system.

The emergency response starts with citizens who contact emergency telecommunicators via 9-1-1. These telecommunicators (or "emergency dispatchers") are trained to expertly identify suspected cardiac arrest over the phone and then coach bystanders to provide effective telephone-CPR. In King County, fire departments respond "code red" to these critical patients where seconds can make the difference between life and death. The fire department emergency medical technicians (EMTs) are often supported by law enforcement who also respond to suspected cardiac arrests to provide early CPR and early AED defibrillation. Paramedics typically arrive within minutes of the EMTs to deliver advanced care to include specialized medications and advanced breathing support.

These EMS providers work in a finely choreographed manner to achieve consistent high-quality CPR, and restore a patient's heartbeat. If the heart can be restarted, the patient is transported to the hospital where specialty intensive services can be used to help the heart and brain recover. Cardiac arrest resuscitation is very challenging, and not just because of the time-sensitive need for multiple treatments. There is also the fact that the individual patient's response to care is often variable such that there are many twists and turns that require the EMTs and paramedics to manage each patient in a distinct manner. The many "moving pieces" and fast-moving treatments require substantial expertise that is refined by ongoing training, review, and experience.

Therefore, EMS providers train regularly in CPR and resuscitation. The coordinated approach only occurs because each team member expertly performs their role to achieve synergistic resuscitation effect. In King County, we consider the professional responders (telecommunicators, law enforcement, EMTs, and paramedics) to be the world experts at cardiac arrest resuscitation. Although training is essential, some of this expertise can also be achieved through close review of prior cardiac arrest care. As part of a Washington State Department of Health-endorsed quality improvement (QI) program, senior paramedics and physicians provide a second-by-second assessment of the resuscitation from the start of the 9-1-1 call to arrival at the hospital. The program of QI review for cardiac arrest derives from a long history of the Medic One system that commits to objective measurement.



*The founding EMS physician leaders – Drs. Leonard Cobb, Michael Copass, and Mickey Eisenberg – established a strategy that challenges the EMS system and its providers to continuously learn as a means to improve care for patients.*

Seattle & King County have supported a cardiac arrest QI registry for the past five decades. The registry is the basis to assess aggregated county-wide performance as well as individual case details. In some instances, the details of cardiac arrest presentation, care, and outcome undergo a second-by-second review by senior paramedics and/or EMS physicians. The review uses a range of informational resources – the 9-1-1 and defibrillator recordings, the EMS reports, and information from the hospital – to provide a 360 review of care. The review provides individual case assessment for the team of providers about the details of CPR performance (e.g., chest compression rate, interruptions) and medications treatment (e.g., choice, timing, dose), among many other objective measurements. These intensive reviews are often conducted in the most dynamic patients – those who present with a shockable (ventricular fibrillation or pulseless ventricular tachycardia) rhythm.

The system has learned substantially from these efforts of individual case review, with this approach enabling small, measured refinements over many years. As a result, the system strives and expects to improve. Such efforts have enabled King County to continue to lead in lifesaving EMS care highlighted by cardiac arrest resuscitation.



# EMS Funding and the 2021 Financial Plan

## Overview

When the 2020-2025 EMS levy was planned in 2018, the region was in the ninth year of a historical economic expansion, the second longest period of expansion on record. Seattle and King County local economic signals were solid with strong job growth, low unemployment, and rising rent and home prices. The economic forecast called for continued growth through the 2020-2025 levy period, although at a reduced pace. In the time leading up to the new levy, Assessed Valuations (AV) and new construction grew significantly. Increased property taxes from new construction resulted in carrying forward \$26 million into the new levy; and AV growth allowed the region to start with a significantly lower levy rate (26.5 cents/\$1,000 AV compared to 33.5 cents/\$1,000 AV in 2014).

Despite the healthy outlook, King County leaders insisted on including appropriate reserves in the levy to ensure the system could weather an economic downturn. The final levy plan included Rainy Day and Supplemental reserves to accommodate a potential change in economic conditions.

The sound foundation of the 2020-2025 Strategic Plan created resiliency for EMS finances when faced with the challenges of providing services during the pandemic, a significant turnover of the workforce, and potential a reduction in the main revenue source, property taxes. This year's financial section focuses on the current projection's ability to meet emerging needs.

The following financial information is based on the March 2022 forecast by the King County Office of Economic and Forecast Analysis (OEFA). An inter-local agreement between King County and the City of Seattle allows for EMS levy funds collected within the Seattle city limits to go directly to, and be managed separately by, the city. Therefore, this section focuses on funds within the King County EMS Fund. Many parts of the report compare the original September 2019 plan to current forecast.

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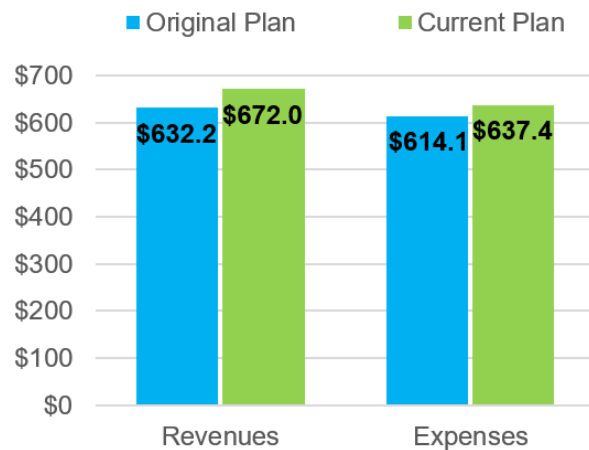
## General Update

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In the first year of the levy, two key levy components - starting levy AV and forecast new construction - were higher than forecast. This resulted in a slight increase to projected property tax revenues over the levy period. Due to the higher starting level and higher forecasts for the remaining years, property taxes are forecast at levels higher than the original plan.

The region has also seen inflation, specifically the CPI-W used to inflate allocations, at rates significantly higher than the original plan. Despite this, the increase in revenue is projected to cover the increased expenses due to inflation, and also fully fund reserves.

**Original Plan to Current Plan (2022)**



## 2021 Expenditures (EMS Levy Fund)

EMS levy revenues support Medic One/EMS operations related to direct service delivery and support programs:

### Advanced Life Support (ALS)

**Services** (paramedics) – covers all eligible ALS costs

### Basic Life Support (BLS) Services

(emergency medical technicians (EMTs) – contributions toward BLS services

### Regional Support Services (RSS) -

core programs critical to providing high quality out-of-hospital emergency care

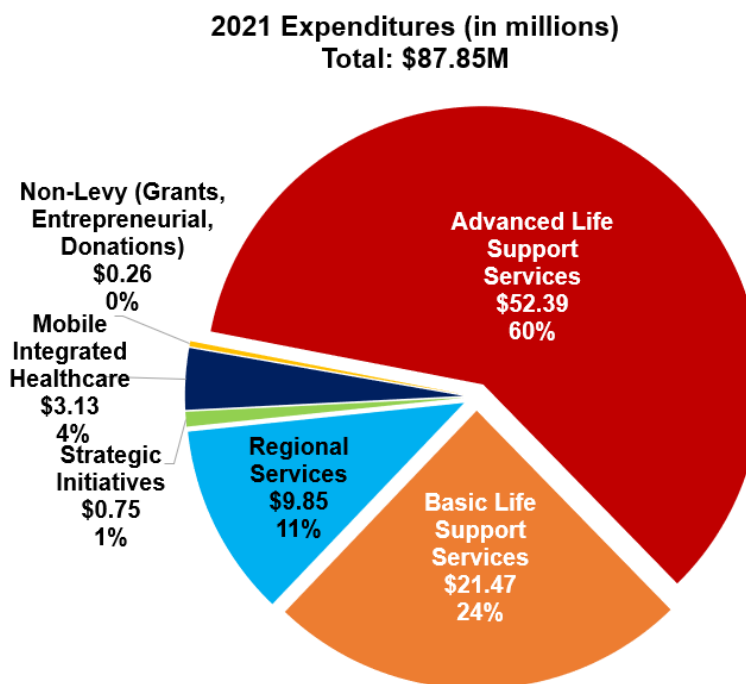
### Strategic Initiatives (SI) – support

for pilots and projects focused on improving the system

### Mobile Integrated Health (MIH) -

expands implementation of community focused MIH into region

**Non-Levy (Grants, Entrepreneurial and Donations)** – grants related to the Center for Evaluation of EMS (CEEMS), donations and last year of entrepreneurial program



## 2020-2025 Strategic Initiatives (SIs)

The 2020-2025 Strategic Plan includes three Strategic Initiatives: 1) The Vulnerable Populations Strategic Initiative (VPSI); 2) Accelerating Evaluation and Innovation: An Opportunity for Unprecedented Quality Improvement (AEIOU); and 3) The EMS Online Strategic Transition in Regionalized Innovation, Value and Education (STRIVE). All the Initiatives were implemented in 2020, although total Strategic Initiative spending that year was lower than projected. In 2021, each Initiative continued to make great strides. The region also continued its work on two initiatives funded in the 2008-2013 Strategic Plan - the Emergency Medical Dispatch (EMD) Initiative to modernize dispatch center's electronic Computer-Based Dispatch (CBD) system was implemented in 2021, and the EMD QI Initiative to enhance dispatch quality improvement will be completed in 2023. For more information on strategic initiatives, see page 34.

STRATEGIC INITIATIVE EXPENDITURES	2020 Actuals	2021 Actuals
AEIOU QI SI	\$5,445	\$19,005
STRIVE SI	\$2,805	\$329,598
VPSI	\$356,166	\$310,735
<b>2020-2025 Strategic Initiative Expenditures</b>	<b>\$364,416</b>	<b>\$659,338</b>
EMD SIs (2008-2013)	\$68,740	\$94,229
<b>Total Strategic Initiative Expenditures</b>	<b>\$433,156</b>	<b>\$753,567</b>

## 2021 Revenues

Property taxes accounted for 98.8% of EMS Fund revenues. The remaining 1.2% is received from other income sources, including: interest income, revenues related to property taxes, charge for services, and grants.

Revenues	2021 Actuals
Property Taxes	\$104,125,542
Other Income	\$1,298,223
<b>Total</b>	<b>\$105,423,765</b>

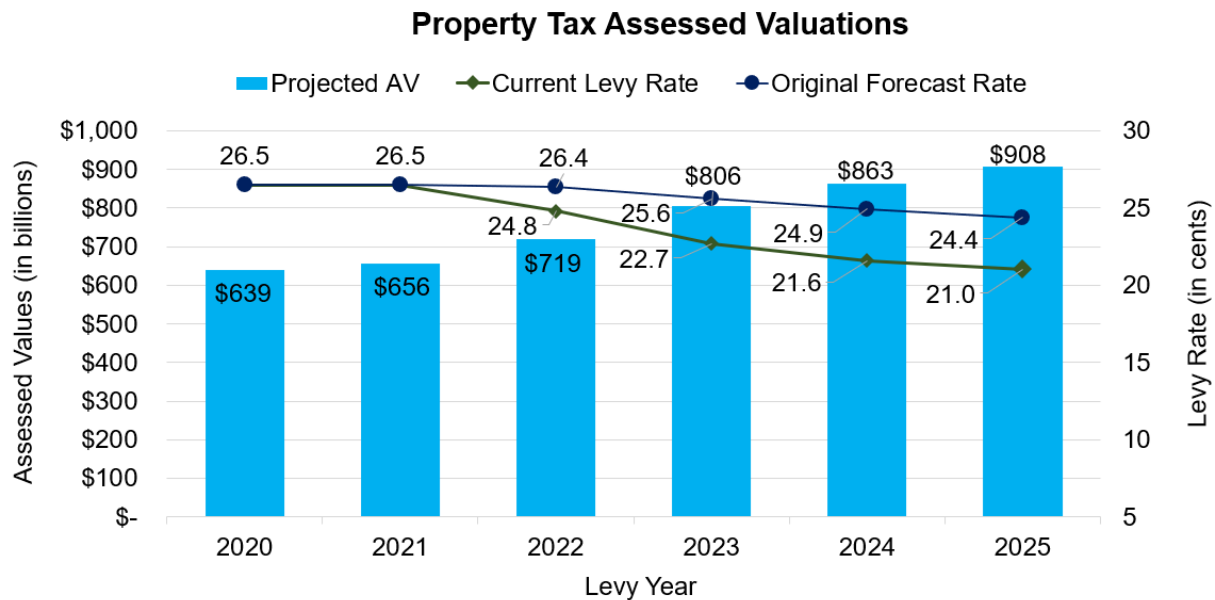
## Updated Financial Forecast

### Assessed Valuations (AV) in the Region

Per the Revised Code of Washington (RCW), the total EMS property taxes collected per year is limited to 1% plus new construction. Because of this, when AV increases at a rate higher than 1% per year, levy rates decrease to remain within the legal limit. Due to the increased AV during the 2014-2019 levy, the levy rate decreased from 33.5 cents/\$1,000 AV in 2014 to 21.7 cents/\$1,000 AV in 2019. Projected increases in AV anticipate the 2020-2025 levy rates to decrease to 21 cents/\$1,000 AV by 2025. This is significantly lower than the original forecast rate.

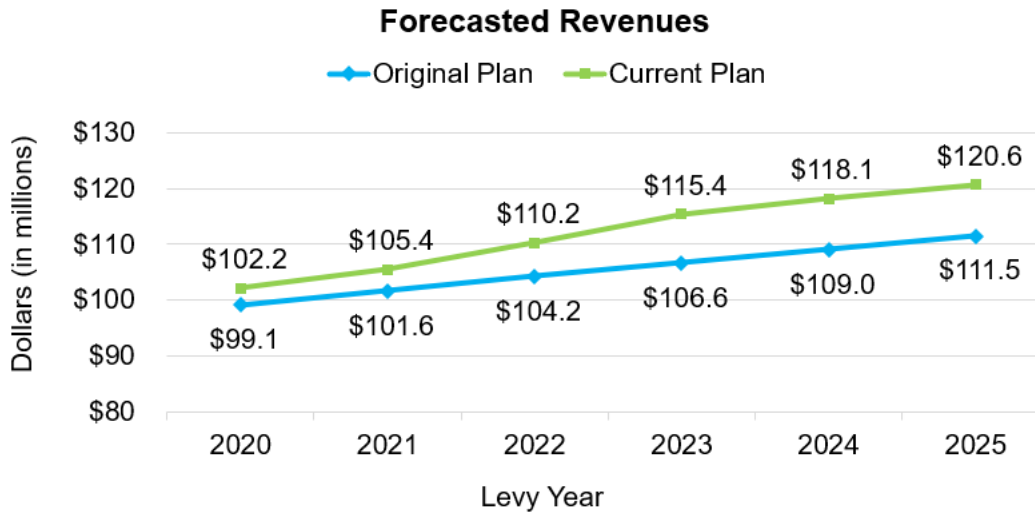
Conversely, when AV declines, the levy rate can increase up to its statutory level (the EMS levy rate that was on the ballot).

The current forecast shows continued AV increases for the remainder of the levy period.



## Revenue Forecast

Due to higher AV than planned in the first year of the levy and strong growth in the later years of the levy, forecasted revenues are significantly higher than originally planned.



The increased revenues are able to cover increased expenditure costs brought on by inflation that is higher than planned, other unplanned needs, and are projected to fund supplemental reserves that can be used to fund other reserves or buy down the rate for the 2026-2031 levy period.

## Expenditure Forecast

Inflation is a key factor impacting expenditure trends over the 2020-2025 levy span. Most EMS allocations are inflated annually by the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W), with an additional 1%. While the CPI-W used to inflate 2020 and 2021 allocations were lower than what was planned, the CPI-W used for 2022 (6.29%) was significantly higher than planned, and 2023 is forecasted to be the same level or even higher.

Strategic Initiative budgets have been adjusted using program balances to enhance the VPSI and STRIVE scope of work and to carryforward emergency medical dispatch (EMD) initiatives.

Expenditure Area (in millions)	Original Plan	Current Plan
Advanced Life Support	\$362.8	\$374.6
Basic Life Support	\$139.8	\$145.2
Regional Services	\$78.5	\$79.4
Strategic Initiatives	\$6.7	\$8.9
Mobile Integrated Healthcare	\$26.2	\$27.2
Non-Levy	\$0.0	\$2.1
<b>Total Expenditures</b>	<b>\$614.1</b>	<b>\$637.4</b>

## Reserves and Contingencies

The 2020-2025 Medic One/EMS Strategic Plan included reserves and contingencies to mitigate financial risk. The original Financial Plan included the levels of Rainy-Day Reserve and Programmatic Reserves at \$43 million. By the end of 2021, we have fully funded the Rainy Day and ALS Reserves and have begun funding Supplemental reserves.

Reserve Balances	2021
90-Day Rainy-Day Reserve	\$21,662,194
ALS Reserves	\$13,790,000
Supplemental Reserves	\$6,280,305
<b>Total Reserves</b>	<b>\$41,732,499</b>

Using reserves is subject to review and recommendation by both the EMSAC Financial Subcommittee and the full EMSAC. One request to use reserves has been recommended and approved in 2021.

<b>Use of Reserves</b>	<b>2021 Approved</b>
ALS Facility Reserves	\$180,000

Contingencies to cover unbudgeted operating needs are budgeted at \$1 million a year (\$6 million overall). In 2021, EMSAC reviewed and recommended expanding the Regional Initial EMT Training budget to accommodate a significant increase in the number of students (primarily due to retirements). No contingency was used in 2021 because we were able to cover additional costs with the existing regional services budget. However, based on the future number of students and classes, we anticipate using contingencies to cover these additional training costs in 2022.

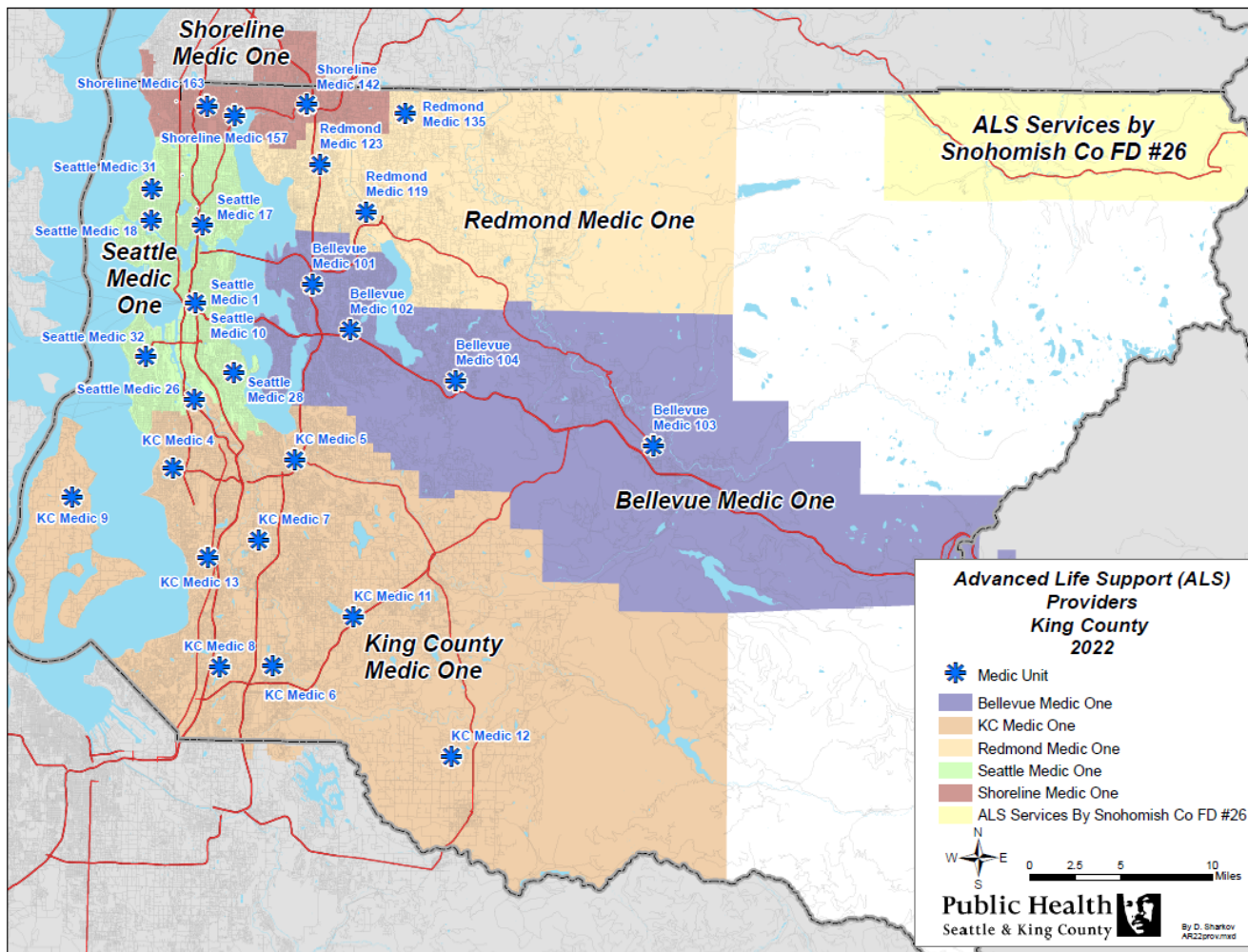
## **Conclusion**

The structure of the EMS levy has again accommodated unknown needs and a changing economic environment. Increased property taxes are allowing us to cover inflationary changes, and our planned contingencies and reserves will fund unanticipated needs. Fortunately, safeguarding the EMS system from unforeseen financial risk was one of the most discussed topics during the levy planning process. As a result, the EMS strategic and financial plans include sufficient reserves should a similar downturn occur in the future. This safeguarding allows the EMS system to continue moving forward to implement the current Strategic Plan.

For more information, refer to Appendix F: Fund 1190 Financial Plan on page 67.

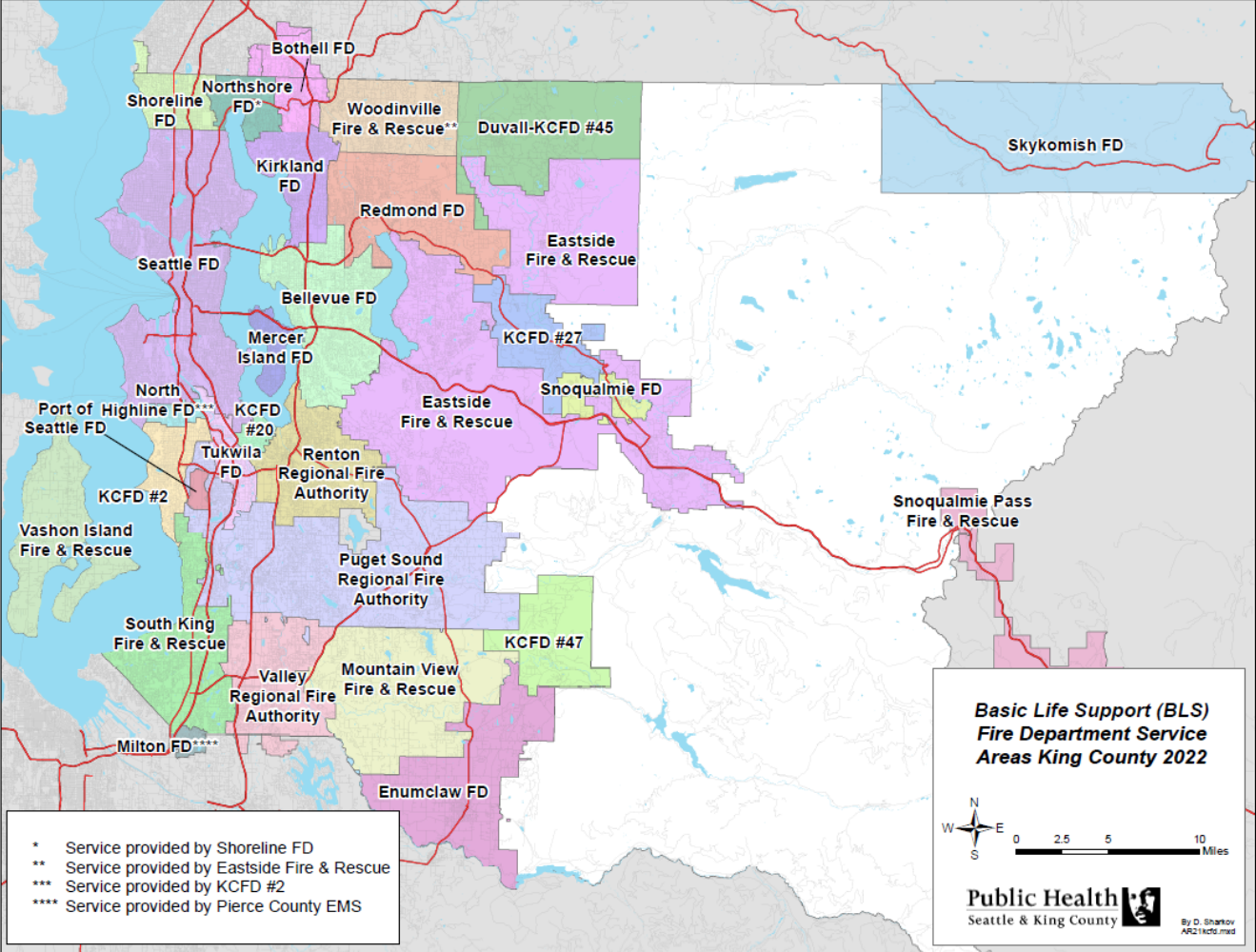
# Appendix A – Regional Maps

## Advanced Life Support (ALS) Provider Areas



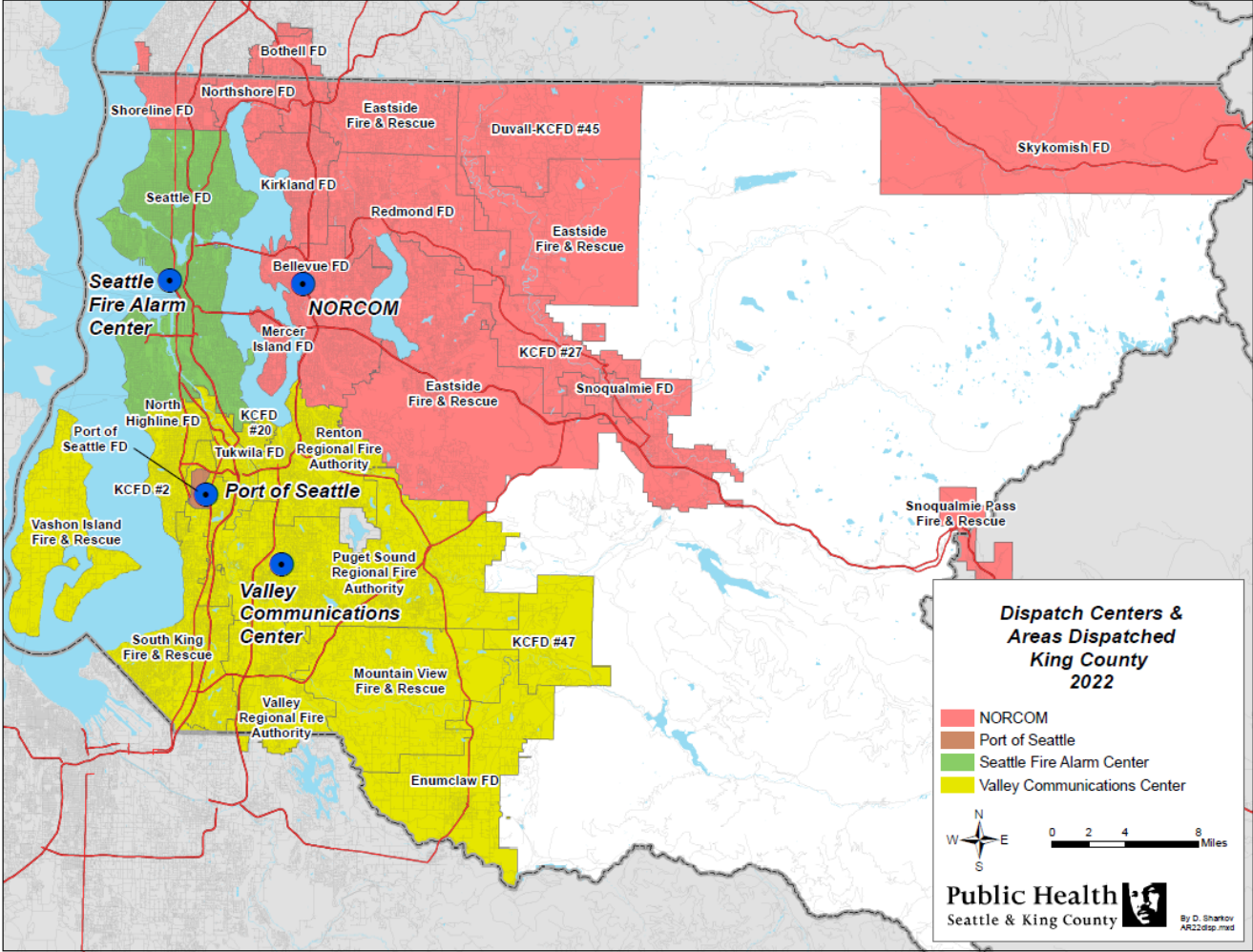
# Appendix A – Regional Maps

## Basic Life Support (BLS) Provider Areas



# Appendix A – Regional Maps

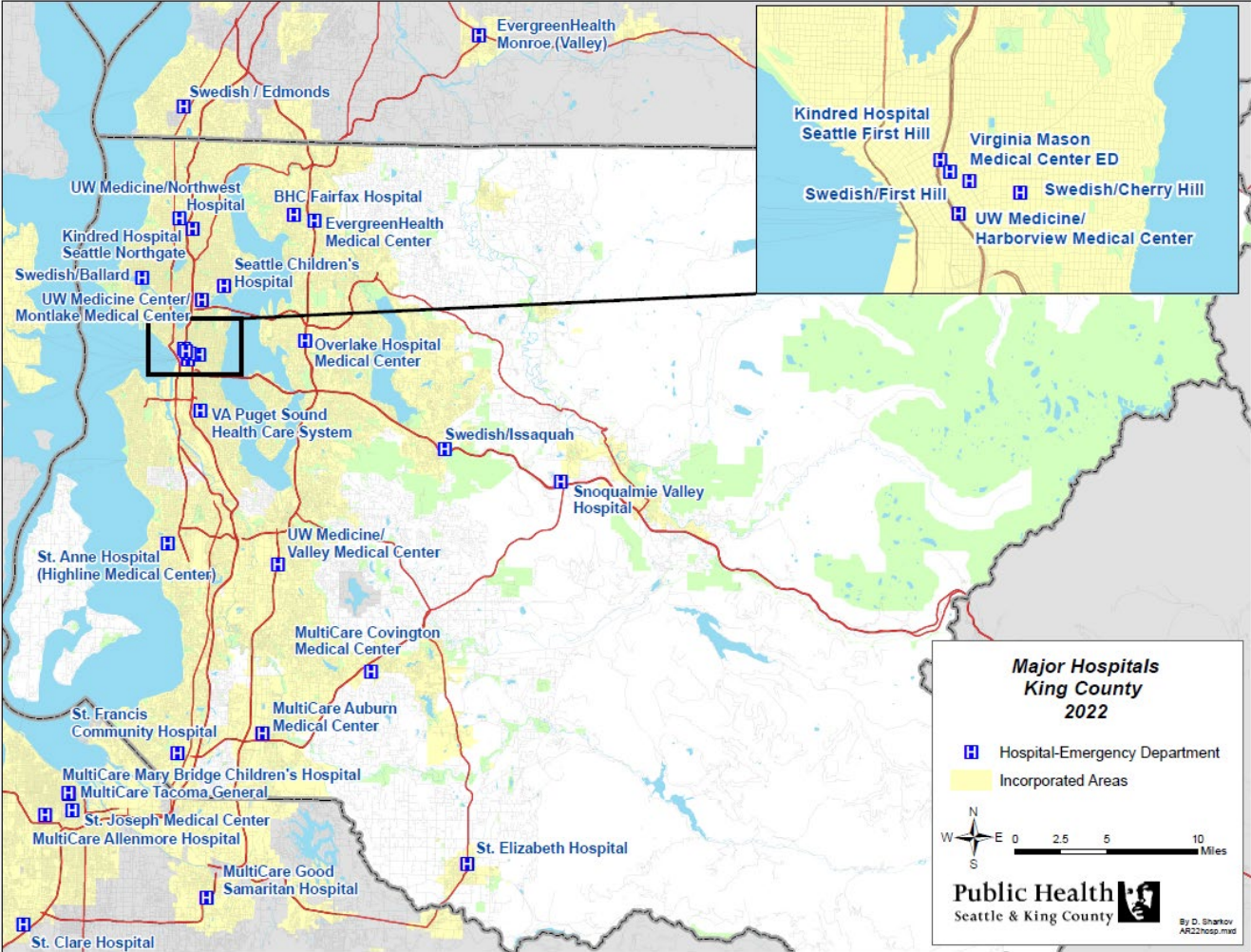
## Dispatch Center Service Areas





# Appendix A – Regional Maps

## Regional Hospitals in Seattle & King County



## Appendix B – EMS Advisory Committee (EMSAC) Members

Name	Representation	Title/Organization
Michele Plorde, Chair	Emergency Medical Services Division	Director, EMS Division
Dennis Worsham	Public Health - Seattle & King County	Interim Director, PHSKC Department
Jay Hagen	ALS Providers - Bellevue	Chief, Bellevue Fire Department
Andrea Coulson	ALS Providers - KC Medic One	MSA, King County Medic One
Adrian Sheppard	ALS Providers - Redmond	Chief, Redmond Fire Department
Harold Scoggins	ALS Providers - Seattle	Chief, Seattle Fire Department
Matt Cowan	ALS Providers - Shoreline	Chief, Shoreline Fire Department
Jeff Clark	BLS in Cities > 50,000 (Sammamish)	Chief, Eastside Fire & Rescue
Mike Marrs	BLS in Cities > 50,000 (Burien)	Chief, Fire District #2
Joe Sanford	BLS in Cities > 50,000 (Kirkland)	Chief, Kirkland Fire Department
Matthew Morris	BLS in Cities > 50,000 (Kent)	Chief, Puget Sound Regional Fire Authority
Steve Heitman	BLS in Cities > 50,000 (Renton)	Chief, Renton Regional Fire Authority
Dave Mataftin	BLS in Cities > 50,000 (Federal Way)	Chief, South King Fire & Rescue
Brad Thompson	BLS in Cities > 50,000 (Auburn)	Chief, Valley Regional Fire Authority
Dr. Tom Rea	King County Medical Program Director Chair, Medical Directors' Committee	Medical Program Director
Dr. Peter Kudenchuk	Medical Director, KCM1	Medical Director, KCM1
Dr. Michael Sayre	Seattle Medical Program Director	Medical Program Director, Seattle
Anita Sandall	KC Fire Commissioner's Assn. - Rural	Fire Commissioner, Eastside Fire & Rescue
John Rickert	KC Fire Commissioner's Assn. - Urban	Fire Commissioner, South King Fire & Rescue
Ryan Simonds	Labor - BLS	Renton Regional Fire Authority
Steve Perry	Labor - ALS	Paramedic, KCM1
Lora Ueland	Dispatch	Director, Valley Communications Center
Brandt Butte	Ambulance	American Medical Response
Ed Plumlee	Citizen Representative	
Vacant	Health Care System	

## Appendix C: EMS Division Publications

The EMS Division collaborates with medical program directors, EMS providers, and University of Washington faculty and other guest researchers to conduct research and analyses. In 2021 and 2022, King County EMS disseminated research findings to wider national and international audiences through the following publications in peer-reviewed scientific and trade journals. This list includes all work published since the 2021 EMS Annual Report.

1. Hsu A, Sasson C, Kudenchuk PJ, et al. 2021 Interim Guidance to Health Care Providers for Basic and Advanced Cardiac Life Support in Adults, Children, and Neonates With Suspected or Confirmed COVID-19. *Circ Cardiovasc Qual Outcomes*. 2021;14(10):e008396. doi:10.1161/CIRCOUTCOMES.121.008396
2. Wyckoff MH, Singletary EM, Soar J, et al. 2021 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations: Summary From the Basic Life Support; Advanced Life Support; Neonatal Life Support; Education, Implementation, and Teams; First Aid Task Forces; and the COVID-19 Working Group. *Resuscitation*. 2021;169:229-311. doi:10.1016/j.resuscitation.2021.10.040
3. Wyckoff MH, Singletary EM, Soar J, et al. 2021 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations: Summary From the Basic Life Support; Advanced Life Support; Neonatal Life Support; Education, Implementation, and Teams; First Aid Task Forces; and the COVID-19 Working Group. *Circulation*. 2022;145(9):e645-e721. doi:10.1161/CIR.0000000000001017
4. Atkins DL, Sasson C, Hsu A, et al. 2022 Interim Guidance to Health Care Providers for Basic and Advanced Cardiac Life Support in Adults, Children, and Neonates With Suspected or Confirmed COVID-19: From the Emergency Cardiovascular Care Committee and Get With The Guidelines-Resuscitation Adult and Pediatric Task Forces of the American Heart Association in Collaboration With the American Academy of Pediatrics, American Association for Respiratory Care, the Society of Critical Care Anesthesiologists, and American Society of Anesthesiologists. *Circ Cardiovasc Qual Outcomes*. 2022;15(4):e008900. doi:10.1161/CIRCOUTCOMES.122.008900
5. Erion G, Janizek JD, Hudelson C, et al. A cost-aware framework for the development of AI models for healthcare applications. *Nat Biomed Eng*. Published online April 7, 2022. doi:10.1038/s41551-022-00872-8
6. Kwok H, Coult J, Blackwood J, Sotoodehnia N, Kudenchuk P, Rea T. A method for continuous rhythm classification and early detection of ventricular fibrillation during CPR. *Resuscitation*. Published online June 3, 2022. doi:10.1016/j.resuscitation.2022.05.019
7. Yang BY, Blackwood JE, Shin J, et al. A pilot evaluation of respiratory mechanics during prehospital manual ventilation. *Resuscitation*. Published online June 8, 2022. doi:10.1016/j.resuscitation.2022.06.003
8. Yang BY, Bulger N, Chocron R, et al. Analysis of Epinephrine Dose, Targeted Temperature Management, and Neurologic and Survival Outcomes Among Adults With Out-of-Hospital Cardiac Arrest. *JAMA Netw Open*. 2022;5(8):e2226191. doi:10.1001/jamanetworkopen.2022.26191

9. Lane DJ, Grunau B, Kudenchuk P, et al. Bayesian analysis of amiodarone or lidocaine versus placebo for out-of-hospital cardiac arrest. *Heart*. Published online March 2, 2022. doi:10.1136/heartjnl-2021-320513
10. Shin J, Walker R, Blackwood J, et al. Cerebral Oximetry during Out-of-Hospital Resuscitation: Pilot Study of First Responder Implementation. *Prehospital Emergency Care*. 2021;0(0):1-5. doi:10.1080/10903127.2021.1948647
11. Schmicker RH, Nichol G, Kudenchuk P, et al. CPR compression strategy 30:2 is difficult to adhere to, but has better survival than continuous chest compressions when done correctly. *Resuscitation*. 2021;165:31-37. doi:10.1016/j.resuscitation.2021.05.027
12. Rea T, Kudenchuk PJ. Death by COVID-19: An Open Investigation. *J Am Heart Assoc*. 2021;10(12):e021764. doi:10.1161/JAHA.121.021764
13. Grunau B, Kawano T, Rea TD, et al. Emergency medical services employing intra-arrest transport less frequently for out-of-hospital cardiac arrest have higher survival and favorable neurological outcomes. *Resuscitation*. 2021;168:27-34. doi:10.1016/j.resuscitation.2021.09.004
14. Lin S, Ramadeen A, Sundermann ML, et al. Establishing a multicenter, preclinical consortium in resuscitation: A pilot experimental trial evaluating epinephrine in cardiac arrest. *Resuscitation*. 2022;175:57-63. doi:10.1016/j.resuscitation.2022.04.016
15. Murphy DL, Bulger NE, Harrington BM, et al. Fewer tracheal intubation attempts are associated with improved neurologically intact survival following out-of-hospital cardiac arrest. *Resuscitation*. 2021;167:289-296. doi:10.1016/j.resuscitation.2021.07.001
16. Chatterjee NA, Kume K, Drucker C, Kudenchuk PJ, Rea TD. Incidence, Mechanism, and Outcomes of On-Plane Versus Off-Plane Cardiac Arrest in Air Travelers. *Journal of the American Heart Association*. 2021;10(18):e021360. doi:10.1161/JAHA.120.021360
17. Bessen B, Coult J, Blackwood J, et al. Insights From the Ventricular Fibrillation Waveform Into the Mechanism of Survival Benefit From Bystander Cardiopulmonary Resuscitation. *Journal of the American Heart Association*. 2021;10(19):e020825. doi:10.1161/JAHA.121.020825
18. Goodloe JM, Topjian A, Hsu A, et al. Interim Guidance for Emergency Medical Services Management of Out-of-Hospital Cardiac Arrest During the COVID-19 Pandemic. *Circulation: Cardiovascular Quality and Outcomes*. 2021;14(7):e007666. doi:10.1161/CIRCOUTCOMES.120.007666
19. Bhandari S, Coult J, Counts CR, et al. Investigating the Airway Opening Index during cardiopulmonary resuscitation. *Resuscitation*. 2022;178:96-101. doi:10.1016/j.resuscitation.2022.07.015
20. Sashidhar D, Kwok H, Coult J, et al. Machine learning and feature engineering for predicting pulse presence during chest compressions. *Royal Society Open Science*. 8(11):210566. doi:10.1098/rsos.210566

21. Rea T, Kudenchuk PJ, Sayre MR, Doll A, Eisenberg M. Out of hospital cardiac arrest: Past, present, and future. *Resuscitation*. 2021;165:101-109. doi:10.1016/j.resuscitation.2021.06.010
22. Bulger N, Harrington B, Krieger J, et al. Prehospital end-tidal carbon dioxide predicts hemorrhagic shock upon emergency department arrival. *Journal of Trauma and Acute Care Surgery*. 2021;91(3):457-464. doi:10.1097/TA.0000000000003312
23. Karatasakis A, Sarikaya B, Liu L, et al. Prevalence and Patterns of Resuscitation-Associated Injury Detected by Head-to-Pelvis Computed Tomography After Successful Out-of-Hospital Cardiac Arrest Resuscitation. *Journal of the American Heart Association*. 2022;11(3):e023949. doi:10.1161/JAHA.121.023949
24. Sayre MR, Yang BY, Murphy DL, et al. Providing whole blood for an urban paramedical ambulance system. *Transfusion*. 2022;62(1):82-86. doi:10.1111/trf.16749
25. Latimer AJ, Counts CR, Sayre MR, Maynard C. Response to Letter to the Editor from Fu-Shan Xue et al Concerning "Routine Use of a Bougie Improves First-Attempt Intubation Success in the Out-of-Hospital Setting". *Ann Emerg Med*. 2021;78(3):458-459. doi:10.1016/j.annemergmed.2021.04.029
26. Brown A, Schwarcz L, Counts C, et al. Risk for Acquiring COVID-19 Illness among Emergency Medical Service Personnel Exposed to Aerosol-Generating Procedures. *Emerging Infectious Disease journal*. 2021;27(9). doi:10.3201/eid2709.210363
27. Goldenberg I, Bos JM, Yoruk A, et al. Risk Prediction in Women With Congenital Long QT Syndrome. *J Am Heart Assoc*. 2021;10(14):e021088. doi:10.1161/JAHA.121.021088
28. Bjelic M, Zareba W, Peterson DR, et al. Sex hormones and repolarization dynamics during the menstrual cycle in women with congenital long QT syndrome. *Heart Rhythm*. Published online May 5, 2022:S1547-5271(22)01953-1. doi:10.1016/j.hrthm.2022.04.029
29. Sharkey-Toppen T, Kurth JD, Saadon O, et al. State Requirements for Medical Directors in the United States. *Prehosp Emerg Care*. Published online July 25, 2022:1-4. doi:10.1080/10903127.2022.2098435
30. Goldenberg I, Younis A, Huang DT, et al. Use of oral contraceptives in women with congenital long QT syndrome. *Heart Rhythm*. 2022;19(1):41-48. doi:10.1016/j.hrthm.2021.07.058
31. Nichol G, Zhuang R, Russell R, et al. Variation in time to notification of enrollment and rates of withdrawal in resuscitation trials conducted under exception from informed consent. *Resuscitation*. 2021;168:160-166. doi:10.1016/j.resuscitation.2021.07.039

## Appendix D: EMS Performance Measures

Resource Category	Performance Measure	Definition	2021 Results
<b>Systemwide</b>	Rate of cardiac arrest survival (Utstein)	% discharged alive from hospital for all non-traumatic bystander witnessed cardiac arrests with an initial arrest rhythm of VF/VT	46%
<b>Bystander</b>	Rate of bystander CPR in cases of cardiac arrest	% bystander CPR provided for cardiac arrest cases where the arrest occurred before arrival of EMS personnel. Includes only non-traumatic etiology that received ALS care in patients 2 years of age or older	75%
<b>Dispatch</b>	Rate of correctly identified cardiac arrest by telecommunicators	% of confirmed cardiac arrest cases that were correctly identified by dispatcher when provided opportunity to assess	97%
	Rate of correctly identified resource used by telecommunicators	% of total number of reviewed calls that received correct EMS resource	96%
	Rate of correctly transferred T-IDC calls	% of T-IDC calls that were sent to the Nurseline versus received a BLS response	81%
<b>Basic Life Support (Emergency Medical Technicians)</b>	% that response time standards are met for emergency BLS calls	Urban response areas: 10 minutes or less, 80 % of all calls; Suburban response areas: 20 minutes or less, 80% of all calls; Wilderness response areas: As soon as possible	Urban: 5.2 Suburban: 6.3 Rural: 7.3 Wilderness: -
	Rate of EMTs documenting FAST and glucometry for suspected stroke patients*	% of EMS-suspected stroke patients with EMT documentation of FAST exam and glucometry results	67%
	Rate that “on scene time” standards are met	% of suspected CVA and suspected TIA patients with < 15-minute BLS scene time	43%
	Rate of taxi transported patients	% of taxi transports of all BLS transports	1% 415 vouchers issued
	Compression fraction during resuscitation attempts	% of time that compressions are actively applied to the chest, until efforts are ceased, or until sustained ROSC is achieved (whichever event comes earliest)	91%

\*Modified measure to look at EMS-suspected stroke patients instead of hospital-confirmed stroke patients to better align with WA state Key Performance Indicators 6.1 and 6.2 (reference: <https://www.doh.wa.gov/Portals/1/Documents/Pubs/530189February2017.pdf>).

Resource Category	Performance Measure	Definition	2021 Results
<b>Advanced Life Support (Paramedics)</b>	% that response time standards are met	Respond on average 10 minutes or less, 14 minutes or less, 80% of all calls	=<10 min. 73.4% =<14 min. 92.7% Mean time 8.8 min.
	Rate of paramedics documenting a 12-lead ECG for STEMI patients	% of suspected STEMI cases where paramedics documented to use of a 12-lead ECG	95%
	Rate that "on scene time" standards are met	% of suspected STEMI patients with < 15 minute on scene time	28%
	Rate of paramedics documenting Glasgow Coma Scale for trauma patients	% of trauma patients transported to Harborview Medical Center by paramedics where GCS was documented	90%
	Rate of scene time for trauma patients	% of trauma patients taken to Harborview Medical Center by paramedics with < 15 minutes ALS scene time	50%
	Rate of successful first attempt intubations	% of successful first attempt intubations	85%
<b>Regional</b>	Rate of cancelled enroute ALS calls	% of cancelled enroute ALS calls to all ALS calls	21%
	% of calls where no upgrade or downgrade was needed	% of calls where ALS was not cancelled and not requested from scene	55%
	Rate of ALS requests from scene	% of BLS requests for ALS from scene of all ALS calls	24%
	# of paramedic hours above planned 2 paramedic staff per unit	# of paramedic hours above planned two (2) paramedic unit staffing	372 hours
	Rate of satisfied customers	% of satisfied or very satisfied customers as reflected in survey results	Not available

## Appendix E: EMS Division Contact Information

The EMS Division consists of four (4) sections and King County Medic One.

### Emergency Medical Services Division

Public Health – Seattle & King County

401 Fifth Avenue, Suite 1200

Seattle, WA 98104

Website: <http://www.kingcounty.gov/health/ems.aspx>

Phone: (206) 296-4693

Fax: (206) 296-4866

### Administration Section

Contracts

Finance

Strategic Planning

Phone: (206) 263-8549

### Community Programs Section

Communities of Care Program

CPR/AED Training Programs

Emergency Medical Dispatch (EMD)

Injury Prevention - One Step Ahead Fall Prevention Program

Mobile Integrated Healthcare

Phone: (206) 263-1457

### Regional Quality Improvement Section

Center for the Evaluation of EMS (CEEMS)

Regional Medical Control and Quality Improvement

Regional Data Collection and Analysis

Phone: (206) 263-8057

### Training and Education Section

EMS Online

Basic Life Support Training

Advanced Life Support Training

Phone: (206) 263-8054

### King County Medic One

20811 84<sup>th</sup> Avenue S., Suite 102

Kent, WA 98032

Phone: (206) 296-8550

Fax: (206) 296-0515



## Appendix F: EMS Fund 1190 Financial Plan

The following financial plan provides an overview of the EMS Fund 1190, including a summary of revenues, expenditures, fund balance, and reserves and designations based on 2021 actuals and a 2022 estimated forecast. In alignment with King County's strategic goal of financial stewardship, this Plan is regularly reviewed by EMS regional partners to ensure sound financial management.

<b>EMS FUND 1190 FINANCIAL PLAN</b>		
	<b>2021 Actuals</b>	<b>2022 Estimate</b>
<b>BEGINNING FUND BALANCE (A)</b>	<b>62,103,714</b>	<b>78,942,183</b>
<b>REVENUES</b>		
Property Taxes	104,125,542	109,416,669
Interest Earnings/Miscellaneous Revenue	1,298,223	812,847
<b>TOTAL REVENUES (B)</b>	<b>105,423,765</b>	<b>110,229,516</b>
<b>EXPENDITURES</b>		
Advanced Life Support Services	52,390,846	60,590,624
Basic Life Support Services	21,466,470	23,409,618
Regional Services	9,851,317	13,107,340
Strategic Initiatives	753,567	1,304,922
Mobile Integrated Healthcare	3,132,379	4,377,862
Grants, Entrepreneurial & Donations	257,652	250,000
<b>TOTAL EXPENDITURES (C)</b>	<b>87,852,231</b>	<b>103,040,366</b>
<b>TOTAL REVENUES LESS TOTAL EXPENDITURES (D)</b>	<b>17,571,534</b>	<b>7,189,150</b>
<b>Other Fund Transactions (E)</b>	<b>(733,065)</b>	<b>(733,065)</b>
<b>ENDING FUND BALANCE (A+D+E=F)</b>	<b>78,942,183</b>	<b>85,398,268</b>
<b>RESERVES AND DESIGNATIONS</b>		
Designations (including Program Balances)	(37,209,684)	(37,209,684)
Reserves*	(41,732,499)	(48,188,584)
<b>TOTAL RESERVES AND DESIGNATIONS (G)</b>	<b>(78,942,183)</b>	<b>(85,398,268)</b>
<b>ENDING UNDESIGNATED FUND BALANCE</b>	<b>-</b>	<b>-</b>

\*Refer to page 54 for additional details on reserves.

# Appendix G: Ordinance 12849 – Evaluation of Countywide EMS

09/05/97 9:56 AM

Louise Miller  
Pete von Reichbauer  
Rob McKenna  
Dwight Pelz  
Maggi Fimia  
Greg Nickels  
Larry Gossett  
Cynthia Sullivan  
Larry Phillips  
Chris Vance  
**Jane Hague**

Introduced By:

EMSrvw3/cgh/jjs/we

Proposed No.:

97-554

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## ORDINANCE NO. **12849**

AN ORDINANCE directing the Executive to evaluate the provision of county-wide emergency medical services and to establish an EMS Financial Planning Task Force, and declaring an emergency.

### PREAMBLE:

Emergency medical services are among the most vital services provided by the county to its residents. Since its initial development in 1977, the county's emergency medical services program has become a model for similar programs world-wide and is now a firmly established regional system on which citizens rely.

The county council fully supports the continued provision of this invaluable service and believes it should be afforded a long-term, stable funding source. The current, near total reliance on a six-year voter-approved levy puts the program's funding in regular jeopardy and connotes that the county considers it an optional program. Emergency medical services are among the county's most highly demanded and respected services and, because of the crucial, life-saving aid provided, are not considered optional. These services are critical and deserve a secure funding base that supports an appropriate level of service.

The county council is committed to researching more secure, permanent funding sources for this important program and, therefore, is directing that a Task Force be established to fully analyze potential funding alternatives. In addition, in order to help guide the development of this program, the county council is directing the executive to evaluate and pursue various means to better educate citizens on the use of emergency medical services as well as to report annually on various factors related to the provision of emergency medical services, including trends that might affect demand and financial estimates for the upcoming years.

BE IT ORDAINED BY THE COUNCIL OF KING COUNTY:

1            SECTION 1. Findings. Because the directives contained in this ordinance are so closely  
2 tied to the proposed emergency medical services levy as outlined in proposed ordinance 97-392,  
3 the county council finds it necessary to approve this ordinance in conjunction with proposed  
4 ordinance 97-392. Proposed ordinance 97-392 must be effective by September 19, 1997 in order  
5 to meet the deadline for the November 1997 ballot. Therefore, it is necessary to enact this  
6 ordinance as an emergency so that it may be effective at the same time as proposed ordinance 97-  
7 392.

8            SECTION 2. Annual Review. By September 1 of each year that the county-wide EMS  
9 levy is collected, the executive shall prepare and present to the council an evaluation of the  
10 following:

11            A. implementation status of the policies, plans and strategic initiatives included in the  
12 Emergency Medical Services Strategic Plan;

13            B. trends in the health care industry that might affect demand for emergency medical  
14 services, including, but not limited to, enrollment criteria for and service provided by the state's  
15 basic health plan;

16            C. emergency medical services provided to special populations including the elderly and  
17 citizens who are not fluent in english; and

18            D. estimated expenditure levels and revenue assumptions for the upcoming levy year and  
19 the associated levy rate.

20            SECTION 3. User Education. The executive shall evaluate whether specific  
21 population groups rely on emergency medical services for non-emergency health care,  
22 and shall develop and implement an educational outreach plan and materials designed to  
23 better inform citizens of the various health care options available to them other than  
24 emergency medical services. This evaluation and plan shall be presented to the county  
25 council in conjunction with the first annual review outlined in section 2 of this ordinance.

1            SECTION 4. EMS Financial Planning Task Force. The executive shall appoint a fifteen-  
2 member EMS financial planning task force, to be confirmed by the county council. This task force  
3 will work in cooperation with the EMS advisory committee recommended by the 1998-2003  
4 Emergency Medical Services Strategic Plan.

5            A. By December 31, 1998, this task force will present to the county council an analysis of  
6 long-term funding alternatives that would allow the county to reduce its reliance on property tax  
7 levies to support emergency medical services.

8            B. This task force shall consist of the director of the Seattle-King County division of  
9 public health, the medical program director for the King County emergency medical services  
10 division, the director of the office of budget and strategic planning, the director of the department  
11 of finance, two representatives from the county council, 1 representative from each city within the  
12 county with a population over 50,000, two representatives from smaller cities appointed by the  
13 Suburban Cities Association, two fire district commissioners and two citizens-at-large from the  
14 unincorporated area.

12849

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SECTION 5. Emergency. For the reasons set forth in section one of this ordinance, the county council finds as a fact and declares that an emergency exists and that this ordinance is necessary for the immediate preservation of public peace, health, or safety or for the support of county government and existing public institutions.

INTRODUCED AND READ for the first time this 8<sup>th</sup> day of September, 1997

PASSED by a vote of 13 to 0 on this 8<sup>th</sup> day of September, 1997

KING COUNTY COUNCIL  
KING COUNTY, WASHINGTON

[Signature]  
Chair

ATTEST:

[Signature]  
Clerk of the Council

APPROVED this 8<sup>th</sup> day of September, 1997.

[Signature]  
King County Executive

Attachments: None

The Clerk of the King County Council does hereby certify that the attached is a true and correct copy of the original.

Witness my hand and official seal this 9<sup>th</sup> day of Sept., 1997

Clerk of the King County Council

By [Signature]